QUICK! SPEED DEMON 1541

10 Great New Programs In This Issue!

December 1988

COMPUTE!'s GAZETTE™

FOR COMMODORE PERSONAL COMPUTER USERS

88's BEST GAMES!

Pros Pick

The Cream of the Crop

DIGI-SOUND

Bach, Beatles, planes or trains— the real thing on your 64

It's Pandemonium! CROSSROADS is back and better than ever!

02220 USA $2.95 Canada $3.50

12

0 71486 02220 6

CompuServe Now Available at Radio Shack®

Make Amigos With Other Amigas.

The largest group of Amiga® users in the world shares its problems and solutions online every day in CompuServe's Amiga Forums. And you can join them.

Whether you're an Amiga novice or a professional user in broadcasting, film special effects, animation, or music production, you'll find support from thousands of Amiga users and nearly every third-party Amiga software and hardware vendor.

Looking for a solid CAD program? Want to make the most of your Amiga's multitasking capabilities? Ask somebody who's been through it all. There's no better way to get more out of your Amiga.

To join CompuServe, see your computer dealer. To order direct or for more information, call 800 848-8199. In Ohio and Canada, call 614 457-0802. If you're already a member, type GO AMIGA at any ! prompt.

CompuServe®

An H&R Block Company

Aussie JOKER POKER

$200,000 JACKPOT

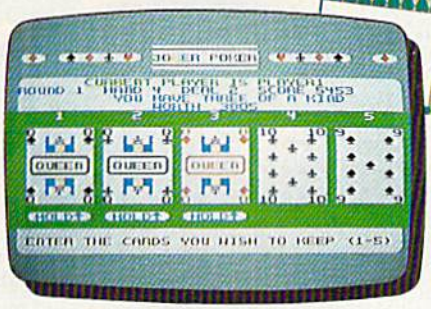
You could share in prizes worth **$200,000** by playing the latest multi-player multi-format PC game from Australia.

Use the **5 free entry forms** included with every **Aussie JOKER POKER** game or send for free entry forms.

At the end of each month December 1988 through April 1989 four finalists and 240 winners of other JOKER SOFTWARE games will be randomly drawn from all entries received that month.

The **20** finalists will be flown to Las Vegas to play **Aussie JOKER POKER** in the **Golden Nugget** casino.

Highest scorers in each of four semi-finals will compete in a Grand Final with a **first prize of $100,000 in cash.**



C64/128™

1,220 Prizes Value $200,000

1,200 Joker PC software games at $29.95 to $49.95 dependent on disk format. Game prizes at sole discretion of sponsor.	$60,000

Cash Prizes for Aussie JOKER POKER Contest Grand Final:

Highest Scorer:	$100,000
Second Highest Scorer:	$5,000
Third Highest Scorer:	$2,500
Lowest Scorer:	$1,500
16 Consolation Prizes of $1,000 each to eliminated Finalists	$16,000
Prize includes air travel for Finalists and their guests from the major airport to Las Vegas with two days and two nights accommodation at the Golden Nugget (approx. retail value $750 each subject to departure points).	$15,000

All taxes and other expenses not specified herein are sole responsibility of winners. All winners will be notified in writing.

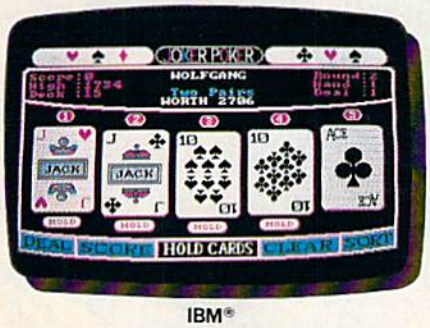
Aussie JOKER POKER is available for SIX major PC's

If your PC has a mouse or keyboard, a mono or color monitor and a 512K minimum ram (except Apple II and C64/128 use 64K and keyboard only) you and your family can practise at home for the Las Vegas final of the **Aussie JOKER POKER contest.**

Suggested retail prices:

IBM & compatibles (CGA Board required)	**$39.95**
Amiga & Atari ST	**$49.95**
Macintosh (mono only)	**$49.95**
Apple II	**$39.95**
C64/128	**$29.95**

If ordering by telephone add $3 shipping & handling and check that your PC meets the minimum hardware requirements as no cash refunds apply. Warranty is limited to free replacement of faulty products returned by prepaid post.



IBM®

Aussie JOKER POKER
A Gambling Game of Skill & Chance

Another Wonder from Down Under

Aussie JOKER POKER Contest Rules

1. No purchase necessary to enter.
2. Void where prohibited by state or federal law.
3. To enter, simply complete and return the the official entry form.
4. Limit five entries per family or household. Five free entry forms and full contest rules are included with "Aussie Joker Poker" or may be obtained by sending a stamped self-addressed envelope larger than 5½" × 7½" with a hand written request to: Aussie Joker Poker Contest Entry Forms, P.O. Box 22381, Gilroy, CA 95021-2381. Mail-in requests limited to one per name, household or family and must be received no later than 3/31/89. WA & VT residents need not include return postage. Full rules also available from participating Mindscape retailers.
5. Monthly entries must be received no later than the last day of the month in which a drawing will take place in order to participate in the month's drawing. Drawings will be held from December, 1988 through April 1989, inclusive. Final entries must be received by 4/30/89.
6. Contest open to legal residents of the U.S.A. and Canada (other than Quebec).
7. Odds of winning depend on number of eligible entries received.
8. Contest subject to complete official rules.

SEE YOUR NEAREST MINDSCAPE SOFTWARE RETAILER

MINDSCAPE INC

EXCLUSIVE DISTRIBUTOR

or if not available order direct on

1-800-24-JOKER

24 hour order service

RETAILERS CALL: 1-800-221-9884

IBM, Apple & Macintosh, Amiga, Atari ST and C64/128 are trademarks or registered trademarks of International Business Machines, Apple Computer, Inc., Commodore Amiga, Inc., Atari, Inc., and Commodore Electronics Ltd, respectively. © 1988 Joker Software

JP 11

European Rush Hour.

Accolade's Grand Prix Circuit is the Formula One racing simulation that whisks you to an exclusive world of power, passion

and performance.

You'll race for the world-renowned teams of McLaren, Ferrari, and Williams on the greatest Grand Prix courses.

Slither through the curves of glamorous Monaco. Blast down the straightaways of Germany. Snarl through the tunnels of

Japan. Compete against a diverse corps of international rivals who seek the same prize—the title of World Driving Champion.

Uninhibited speed. Unchained exhilaration. It can only be found on The Grand Prix Circuit.

How to order: Visit your favorite retailer or call 800-245-7744 (In Colorado, call 303-352-6800).

ACCOLADE™

The best in entertainment software.™

From the people who brought you Test Drive.™

COMPUTE!'s GAZETTE contents

December 1988 Vol. 6, No. 12

features

88's Best Games	**10**	*
Ringside LXIV! *Keith Ferrell*	**18**	*
***Gazette* Readership Survey**	**24**	*

reviews

Red Storm Rising *Keith Ferrell*	**28**	**64**
Sky Travel *Russ Fisher*	**30**	**64**
Zak McCracken and the Alien Mindbenders *Tom Netsel*	**32**	**64**
Monopoly *Ervin Bobo*	**34**	**64**
L.A. Crackdown *Steve Hedrick*	**34**	**64**
The Three Stooges *Keith Ferrell*	**36**	**64**

games

Crossroads II: Pandemonium *Steve Harter*	**38**	**64**
Crossroads II Maze Editor *Randy Thompson*	**39**	**64**
Double Take *Mark Tuttle*	**41**	**64**

programming

BASIC for Beginners: Wish List *Larry Cotton*	**54**	**128/64/+4/16**
Power BASIC: Program Merge *Randy Thompson*	**56**	**64**
Machine Language Programming: Dressing Up GETIN *Jim Butterfield*	**60**	**128/64**
The Programmer's Page: Printing Sounds *Randy Thompson*	**62**	**64**
Digi-Sound *Roger Freeman*	**70**	**128/64**
Materializer *Peter M. L. Lottrup*	**72**	**64**
Dynamic Windows *Michael Broussard*	**74**	**64**
Quick! *Adib Zaky*	**82**	**64**
1526 PrintScreen *James Host*	**86**	**64**
Key Lock *J. Basil Cox*	**88**	**128/64**

departments

The Editor's Notes *Lance Elko*	**4**	*
Letters to the Editor	**6**	*
Feedback *Editors and Readers*	**42**	*
The GEOS Column: Contest Winners!	**58**	*
Horizons: Abusing Software *Rhett Anderson*	**64**	*
D'Iversions: An Electronic Field Trip *Fred D'Ignazio*	**68**	*

program listings

MLX: Machine Language Entry Program for Commodore 64	**104**	**64**
The Automatic Proofreader	**112**	**128/64/+4/16**
How to Type In *COMPUTE!'s Gazette* Programs	**116**	*
Advertisers Index	**100**	

*=General, **64**=Commodore 64, **+4**=Plus/4, **16**=Commodore 16, **128**=Commodore 128

Cover photo ©1988 by Mark Wagoner

COMPUTE!'S GAZETTE (ISSN 0737-3716) is a COMPUTE! Publication, and is published monthly by ABC Consumer Magazines, Inc., 825 Seventh Ave., New York, NY 10019, a division of ABC Publishing, Inc., a Capital Cities/ABC Inc., company. © 1988 ABC Consumer Magazines, Inc. All rights reserved. Editorial offices are located at Suite 200, 324 West Wendover Ave., Greensboro, NC 27408. Domestic subscriptions: 12 issues, $24. POSTMASTER: Send address changes to COMPUTE!'s GAZETTE, P.O. Box 10957, Des Moines, IA 50340. Second class postage paid at New York, NY and additional mailing offices.

editor's notes

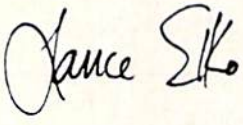
In our final issue of the year, there are a number of items worth noting. First, if you like games—are there any 64 owners who don't?—check out our cover feature, "88's Best Games," on page 10. We solicited individual secret ballots from *GAZETTE* staff members and our regular out-of-house reviewers for the best Commodore 64 games of the year. The resulting compilation listed dozens of games. We selected the titles with the most mentions and came up with our collective vote for the best games of 1988.

Speaking of games, we have "Crossroads II: Pandemonium" in this issue (page 38). Steve Harter has written an excellent sequel that improves on what is already a very popular game ("Crossroads," December 1987) with readers as well as our staff. As a further enhancement to the latest version, contributing editor Randy Thompson developed a clever maze editor. We're sure you'll like the whole package.

Also in this issue is the list of winners from the GEOS Programming Contest sponsored by Berkeley Softworks and *GAZETTE*. Some of the programs we reviewed were outstanding, and Berkeley has plans to publish the best of these on a shareware disk and through Q-Link. For details, see page 58.

Last December, we published the "*GAZETTE* Readership Survey," and we were surprised at the tremendous response. Your feedback helped us to shape the magazine into a product that serves you better. On page 24, we have the 1988 version of that questionnaire, and we'd greatly appreciate a few minutes of your time. Let us know what you like about this magazine and what you don't. This is not a marketing survey or something we share with advertisers. It's an editorial survey designed solely to let you tell us what we're doing—right and wrong—for you, the reader. The results will again help us make a better product for you in the coming year.

At this writing, we're well under way on our January issue, and I can say that we'll be bringing you a solid 1989 debut. Until then, have a safe and happy holiday.



Lance Elko
Senior Editor

COMPUTE!'s GAZETTE

FOR **COMMODORE** PERSONAL COMPUTER USERS

Editor **Lance Elko**
Senior Art Director **Janice R. Fary**
Features Editor **Keith Ferrell**
Technical Editor **Patrick Parrish**
Assistant Editor **Rhett Anderson**
Assistant Technical Editor **Dale McBane**
Assistant Features Editor **Tom Netsel**
Assistant Editor, Submissions & Disk Products **David Hensley**
Editorial Assistant **Mickey McLean**
Copy Editors **Karen Siepak**, **Tammie Taylor**, **Karen Uhlendorf**
Programming Assistant **Troy Tucker**
Contributing Editors **Jim Butterfield** (Toronto, Canada), **Fred D'Ignazio** (E. Lansing, MI), **David English**, **Randy Thompson**

ART DEPARTMENT
Assistant Art Director **Robin Strelow**
Junior Designer **Meg McArn**
Mechanical Artists **Scotty Billings**, **Robin Case**

PRODUCTION DEPARTMENT
Production Director **Mark E. Hillyer**
Assistant Production Manager **De Potter**
Production Assistant **Kim Potts**
Typesetting **Terry Cash**, **Carole Dunton**
Advertising Production Assistant **Anita Armfield**

COMPUTE! PUBLICATIONS
Group Vice President, Publisher/Editorial Director **William Tynan**
Managing Editor **Kathleen Martinek**
Senior Editor **Lance Elko**
Editorial Operations Director **Tony Roberts**
Executive Assistant **Sybil Agee**
Senior Administrative Assistant **Julia Fleming**
Administrative Assistants **Iris Brooks**, **Cathy McAllister**

ABC CONSUMER MAGAZINES
Senior Vice President **Marc Reisch**
Vice President, Advertising **Peter T. Johnsmeyer**
Vice President, Finance **Richard Willis**
Vice President, Production **Ilene Berson-Weiner**

CIRCULATION DEPARTMENT
Vice President **Robert I. Gursha**
Circulation Subscription Staff **Ora Blackmon-DeBrown**, **Harold Buckley**, **Mitch Frank**, **Beth Healy**, **Thomas D. Slater**, **James J. Smith**, **A. Heather Wood**
Subscriber Service **(800) 727-6937**

One of the ABC PUBLISHING Companies
President Robert G. Burton
1330 Avenue of the Americas
New York, NY 10019

ADVERTISING OFFICES
New York: ABC Consumer Magazines, Inc., 825 Seventh Ave., New York, NY 10019. Tel. (212) 265-8360. Bernard J. Theobald, Jr., Group Advertising Director.
Greensboro: COMPUTE! Publications, Suite 200, 324 West Wendover Ave., Greensboro, NC 27408. Tel. (919) 275-9809. Kathleen Ingram.
New England & Mid-Atlantic: Bernard J. Theobald, Jr. (212) 315-1665; Peter Hardy (508) 681-9000; Kathleen Ingram (919) 275-9809.
Midwest & Southwest: Jerry Thompson, Lucille Dennis, Jennifer Delfs (312) 726-6047 [Chicago]; (713) 731-2605 [Texas]; (303) 595-9299 [Colorado]; (415) 348-8222 [California].
West, Northwest, & British Columbia: Jerry Thompson, Lucille Dennis, Jennifer Delfs (415) 348-8222.
Southeast & International: Peter Hardy (508) 681-9000; Kathleen Ingram (919) 275-9809.

Address all advertising materials to: Anita Armfield, COMPUTE! Publications, Inc., 324 West Wendover Ave., Suite 200, Greensboro, NC 27408.

Editorial inquiries should be addressed to: The Editor, COMPUTE!'s GAZETTE, Suite 200, 324 West Wendover Ave., Greensboro, NC 27408.

PRINTED IN THE U.S.A.

Arcade adventure at its finest...

Fast-paced, exciting combat demands the use of all your wits and endurance to best a world teeming with assassins, wizards and monsters. Experience captivating graphics of an unprecedented calibre. Relentless opponents will hone your combat skills to a razor's edge. A simple yet powerful menu and icon interface provides effortless interaction with the world and its people, while the incredibly smooth animation presents a continuous panorama of action and adventure.

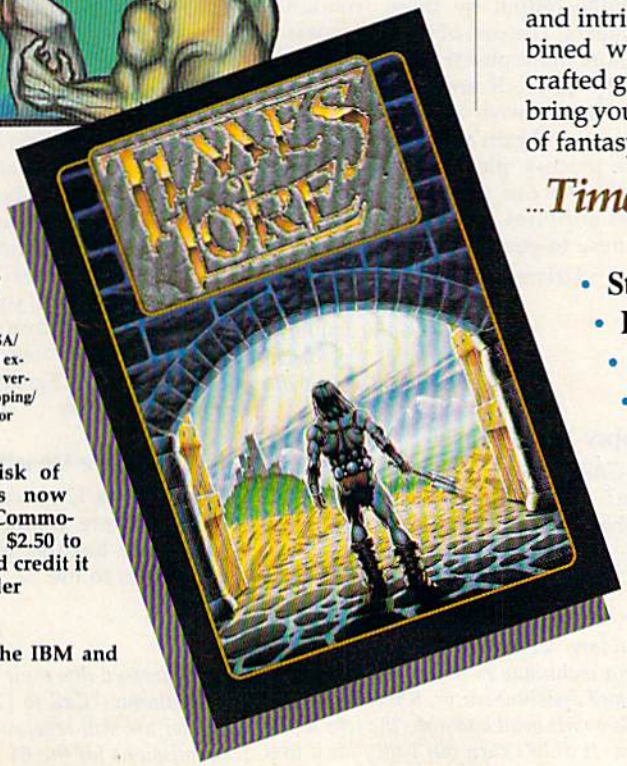
Fantasy role-playing at its best!

Astonishing realism is yours through scores of unique characters and sophisticated conversations. Immerse yourself in the sights and sounds of an ancient world embroiled in turmoil—the disappearance of the king and his young child—the struggle for control of the realm. The stakes are high; your role as the hero-for-hire requires all the courage and savvy you can muster. Your quest for truth will teach you much of the distinction between appearances and reality. Magic and intrigue combined with finely crafted game-play bring you the best of fantasy in...

Screens shown are for the Commodore

...*Times of Lore*

- **Stunning graphics and animation**
- **Fast-paced combat action**
- **Dynamic conversations**
- **Compelling plot**



To get your copy of Times of Lore, either
1) visit your local retailer,

2) call 1-800-999-4939 8am to 5pm EST to order by VISA/MC, or

3) mail check (U.S. $) or VISA/MC#, cardholder name and expiration date to Origin. All versions $39.95 plus $2.50 shipping/handling. Allow 1-2 weeks for delivery

Try it! A demo disk of Times of Lore is now available for the Commodore 64/128K. Send $2.50 to Origin for yours and credit it towards a direct order purchase.

Also available for the IBM and Apple II series.

ORIGIN

Origin Systems, Inc.
136 Harvey Road, Building B., Londonderry, NH, 03053

Times of Lore is a trademark of Origin Systems, Inc.

letters to the editor

Send questions or comments to Letters to the Editor, **COMPUTE!'s Gazette,** *P.O. Box 5406, Greensboro, NC 27403. We reserve the right to edit letters for clarity and length.*

Excel No More

The staff of Surfside sincerely thanks you for running the Excel 2001 disk drive review in the October issue. Scott Thomas should be congratulated for a job well done.

We're sorry we have to report on some unfortunate circumstances. Between the time the drive was submitted for review and the time the review was published, the manufacturer discontinued production of the Excel 2001. Our manufacturer was sued by Commodore and forced to discontinue production of the drives.

We don't know of any other 1571-compatible disk drives in production. As an alternative, Surfside will continue to sell and support the FSD-2 Excelerator Plus as the only 100-percent 1541-compatible drive available. The manufacturer of the FSD-2 has taken the necessary steps to keep Commodore from making any weighty moves.

We would like to extend the offer of our upgrade chip from Creative Micro Designs for all current owners of the Excel 2001. This upgrade chip increases the speed of the drive by 20 percent and is available for $19.95. Also, we will support the one-year warranty on all the Excel 2001s.

Eric Kloor
Surfside Components International
Soquel, CA

To the Rescue

You've done it again! I had printed out a file of documentation for a terminal program and thought, "I wish I could have printed that in condensed type and with three columns instead of a full page. It would have looked a lot better."

The following morning in the mail was a copy of the October issue with Rob Bixby's "Speed Columns" program. I usually wait for the disk to arrive, but once in a while I can't wait to try a new program and sit right down and type it in as I did this one. It works perfectly!

Keep up the good work! I still think *GAZETTE* is the best magazine supporting the 64, and I'll continue to support you in the best charter-subscriber tradition.

Paul L. Baker
Browns Valley, CA

Timing means a lot. Thanks for the kind remarks.

64s for a Worthy Cause

We have successfully applied VIC-20s to the training of Braille transcribers and currently have 12 donated machines being used in this manner.

Our certified transcribers (those who have passed a rigorous test designed by the Library of Congress) are now looking for help in obtaining Commodore 64 computers to use in preparing Braille. Just as a word processor helps a secretary, the Braille editing programs available enable a doubling of Braille output by these wonderful volunteers. The cost of the computers is still more than some transcribers can afford, however. If any readers have a spare 64 they wish to donate to a worthy cause and gain a deductible amount in the process, please have them contact us. We can also use disk drives, power supplies, and monitors. We'll put these to good use.

Delores R. Benjamin, Chairman
Program of Service to the Visually Impaired
8831 Ensley La.
Leawood, KS 66206

A Topsy-Turvy World

Has *GAZETTE* turned your life upside down? The picture on page 55 of the October issue gives evidence that this is true!

Adam Kropelin
Jeffersonville, VT

Yes, Adam, we experimented with a new camera technique in which our photographer and assistant editor, Rhett Anderson, stands on his head and aims the lens at the screen. It didn't turn out badly for a first try, though, did it? Actually, you're right—the picture is upside down, and you were the first (including our staff) to notice.

CP/M Blues

I recently bought a 128. I've been told that there are vast amounts of CP/M software available. Why have I not seen your advertisers promoting CP/M software? If they have, I am having difficulty identifying what is for CP/M as opposed to 128/64 software.

Steve Aslan
Philippines

CP/M, a disk-based operating system that's older than the Commodore 64, is supported by a huge base of public domain software that has accumulated over the years. You don't see many ads for CP/M software in this magazine or other Commodore-specific publications for a couple of reasons. First, CP/M is an operating system that works on many machines—128 CP/M users are a very small portion of the CP/M market. (Also, the market perception is that only a small minority of 128 owners are active CP/M users.) Second, there is no great demand for CP/M software since so much of it is in the public domain.

We've published nearly a dozen articles on CP/M since 1986. Most recently, we ran a two-part series in the March and April 1988 issues: "Super CP/M Software for the 128," by Clifton Karnes. This series discusses in detail a variety of programs recommended by the author. Also, the July 1986 issue contains an article, "CP/M Public Domain Software," that provides names and addresses of contact groups and organizations. If you have back issues of GAZETTE *spanning the past two years, we suggest looking through them (including the "Feedback" column) for more information.*

128 Software Dearth

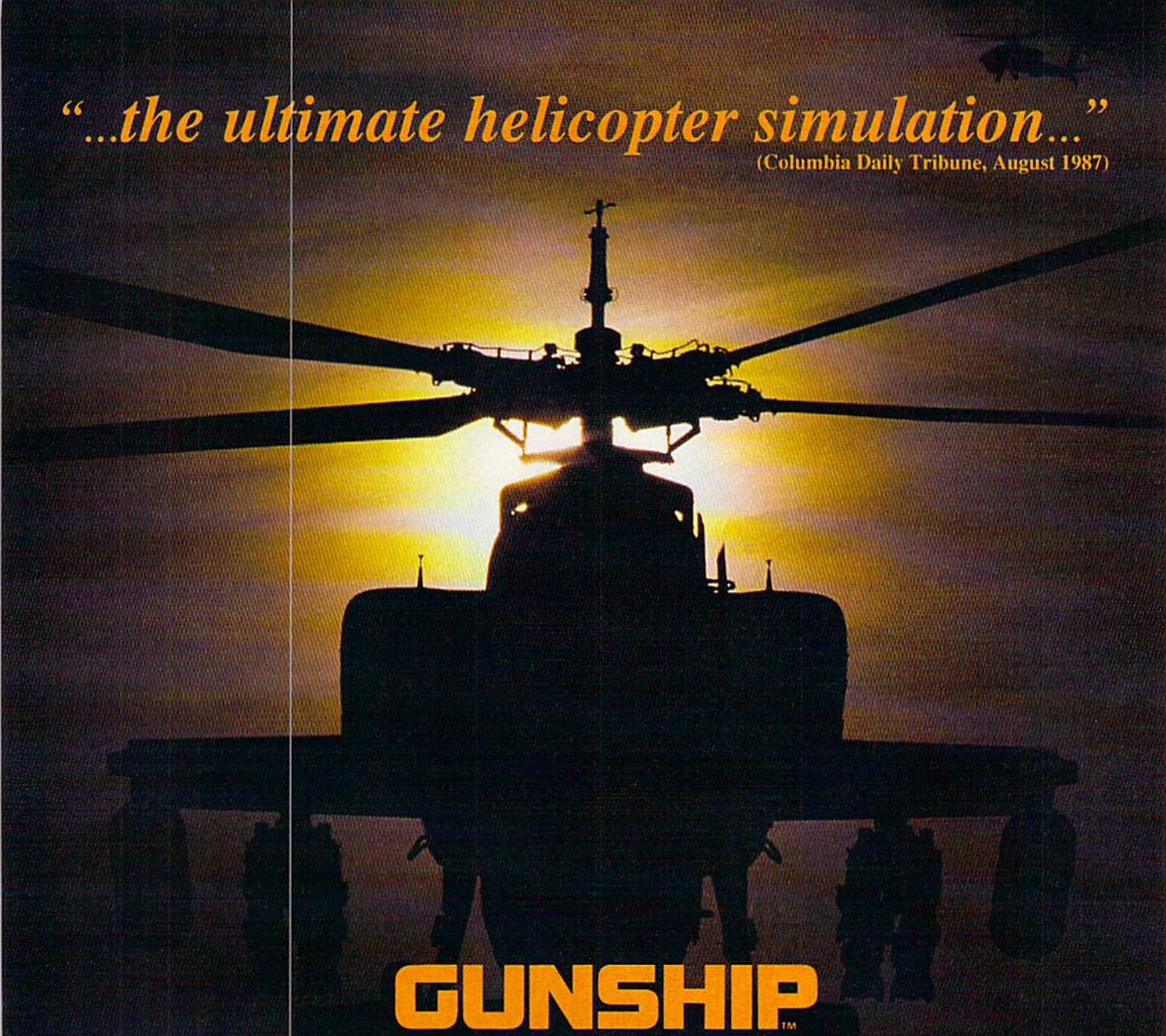
If you were a 128 owner, you'd wonder why you were taking *GAZETTE*. October's issue has just one program, and it's useless to me.

John Locke
Central Point, OR

We addressed this topic in the July issue of this column ("Call to 128 Programmers"), and we are still receiving far more quality submissions for the 64 than we do for the 128. So here's another summons to those of you who program the 128. We'd love to hear from you.

"...the ultimate helicopter simulation..."

(Columbia Daily Tribune, August 1987)



GUNSHIP™

GUNSHIP simulates the U.S. Army's AH-64A Apache attack helicopter — a devastating, high-speed, tree-skimming, armored warrior. It's the most sophisticated chopper on today's electronic battlefront.

And MicroProse makes it real!

But don't just take our word for it. Ask around — it's easy to find one of our 300,000 enthusiastic GUNSHIP pilots. Or do some research — GUNSHIP is receiving rave reviews in the computer press. Here's a head start!

"... one of the most exciting microcomputer programs on the market today ..."
(Commodore Magazine, December 1987)

"... may be the best simulation of any type ever created for the C-64 ..."
(RUN, August 1987)

"... Gunship is a pulse-pounding experience ..."
(Family Computing, June 1987)

For Commodore 64/128

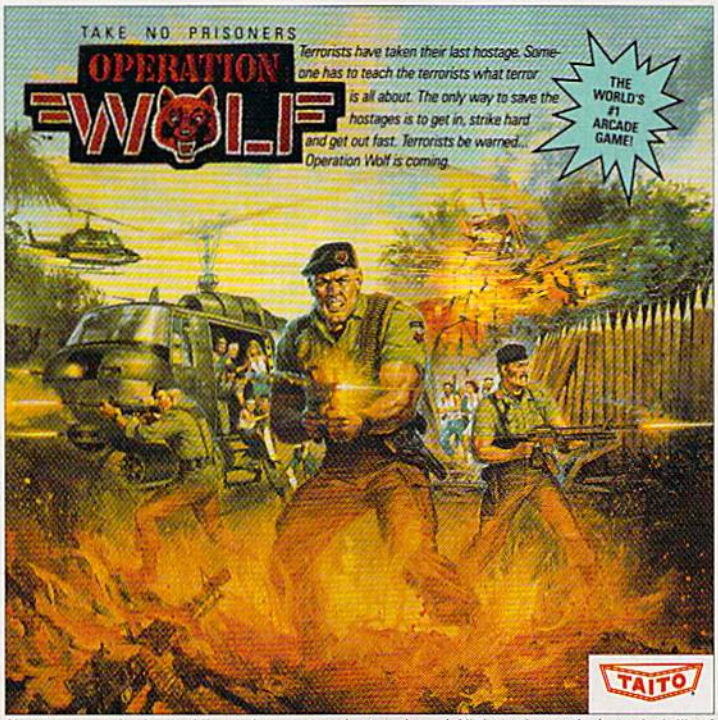
Can't find GUNSHIP? Call (301) 771-1151, weekdays 8am to 5pm EST and order by MC/VISA; or mail check/money order for $39.95 for C-64 version. U.S. funds only. MD residents add 5% sales tax. Free shipping in U.S.; $5.00 international. Allow 1-3 weeks for U.S. delivery.

MICRO PROSE™
SIMULATION • SOFTWARE

180 Lakefront Drive, Hunt Valley, MD 21030 (301) 771-1151

SEVEN WAYS TO MAKE YOUR COMMODORE SCREAM

1) EXPLOSIVE COMMANDO RAIDS.


TAKE NO PRISONERS
OPERATION WOLF
Terrorists have taken their last hostage. Someone has to teach the terrorists what terror is all about. The only way to save the hostages is to get in, strike hard and get out fast. Terrorists be warned... Operation Wolf is coming.
THE WORLD'S #1 ARCADE GAME!
TAITO

Now you can take the world's number one arcade game home! All the action-packed arcade thrills of this awesome hostage rescue are ready for home video play.

2) SUPER-HUMAN WARRIOR LORDS.

VENTURE TO AN ANCIENT WORLD OF DANGER...
RASTAN
In a mythical land of death and adventure, survival is always a breath away. Slay deadly dragons. Capture life-giving magical power signs and conquer the mighty Castle King. Be sure. Be swift. Be brave. You have the power to triumph...use it well.
TAITO

Now you can thrill to one of the biggest-ever coin-op hits on your home computer. Rastan's mind-blowing graphics takes you to a magical land of adventure and excitement.

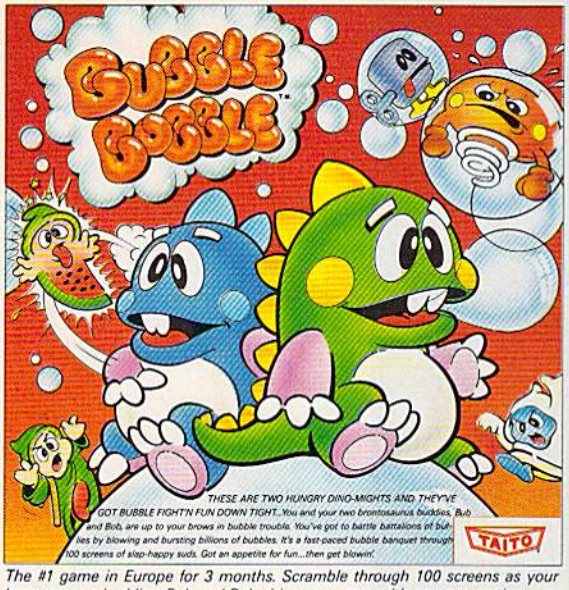
THE ONLY GAME IN TOWN™

TAITO

COMING SOON, THE CLASSIC MIND GAME, QIX.

Taito,® Arkanoid,™ Renegade,™ Alcon,™ Bubble Bobble,™ Sky Shark,™ Rastan™ and Operation Wolf™ are trademarks of Taito America Inc. Copyright © 1988. All rights reserved. Commodore is a trademark of Commodore Electronics, Ltd. Advertisement by: Qually & Company, Inc. (Chicago).

3) BUBBLE BLOWING DINOSAURS.


BUBBLE BOBBLE
THESE ARE TWO HUNGRY DINO-MIGHTS AND THEY'VE GOT BUBBLE FIGHT'N FUN DOWN TIGHT...You and your two brontosaurus buddies, Bub and Bob, are up to your brows in bubble trouble. You've got to battle battalions of buties by blowing and bursting billions of bubbles. It's a fast-paced bubble banquet through 100 screens of slap-happy suds. Got an appetite for fun...then get blowin'.
TAITO

The #1 game in Europe for 3 months. Scramble through 100 screens as your brontosaurus buddies, Bub and Bob, drive you crazy with non-stop action.

4) DEATH-DEFYING ACES.

Take the arcade's meanest air battle home for keeps. Strap in for explosive high-flying action. Hold on for your life as you soar through incredible graphics.

5) INTER-PLANETARY WARFARE.

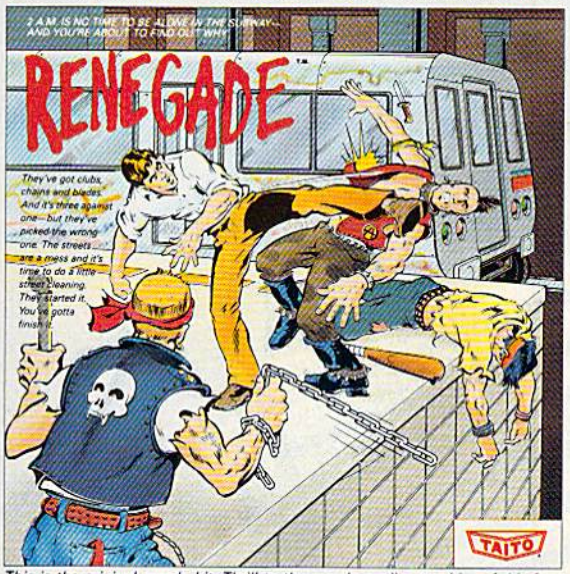
Now you can blast into one of the hottest arcade space games right in your own home. It's the ultimate inter-planetary combat. You've never seen action like this.

6) OUTER SPACE GRID MONSTERS.

SUDDENLY, SPACE IS A DEADLY PLACE...
ARKANOID
There's no turning back. No place to run—no place to hide. They've destroyed your planet and now they're coming after you. Their destruction is your only chance for survival. It won't be easy, but survival never is.
TAITO

Don't settle for imitations. The game voted "one of the best home video games ever" by Electronic Game Player Magazine is ready to blast into your home.

7) RAGING STREET RUMBLES.


2 A.M. IS NO TIME TO BE ALONE IN THE SUBWAY... AND YOU'RE ABOUT TO FIND OUT WHY!
RENEGADE
They've got clubs, chains and blades. And it's three against one—but they've picked the wrong one. The streets are a mess and it's time to do a little street cleaning. They started it. You've gotta finish it.
TAITO

This is the original arcade hit. Thrill to the arcade quality graphics of this fast-paced, street-style karate brawl. Find out what real action is all about!

Taito games will make your Commodore scream with the sights and sounds of arcade action, adventure, survival, destruction, heroes, villains and heart-pounding thrills.

These are the world famous arcade originals and they're ready to wail on your Commodore. Arkanoid,™ Alcon,™ Bubble Bobble,™ Operation Wolf,™ Rastan,™ Renegade™ and Sky Shark™ will make your Commodore do things you didn't think were possible.

Everyone knows that arcade games are the benchmark for all other video games and Taito has been an arcade leader since 1953. Since then we've made over 1,000 classics for arcade and home play. Count on Taito to bring the heat of the arcade to your home computer.

Buy Taito products at leading stores everywhere. Visa/MasterCard holders can order direct anywhere in the U.S. by calling 1-800-663-8067.

88's BEST games

With all the great Commodore 64 games released in 1988, choosing the best was not easy. After due consideration, here are our picks for the best games of the year. If you've missed any of these, be sure to check them out—you'll be glad you did.

The Train

In a world filled with flight and sea simulations, it's nice to have one that runs on rails. Based on a film starring Burt Lancaster, *The Train* is one of 1988's richest entertainment packages. Arcade action, strategy, animation, and plenty of sound effects all go into making this a value-packed simulation that's not easy to master.

Tetris

Tetris is the first entertainment software from the Soviet Union to be marketed in the West, and it's been a tremendous success story in all machine formats. In *Tetris*, the player attempts to manipulate objects of various shapes and sizes as they fall so that they land in a solid pattern. Sound easy? It's not. Sound like fun? It is—and it's thoroughly addictive.

Zak McKracken and the Alien Mindbenders

In the role of an ace reporter for *The National Inquisitor,* you're out to crack the story of a stupidity epidemic from outer space. *Zak* leans heavily on problem solving to propel characters through scenes. As you might expect in a product from Lucasfilm, the game includes many cinematic touches. Cut scenes break the action and show you what's happening elsewhere. Sight gags, one-liners, pratfalls, and a hilarious yet cunning story round out the package.

Red Storm Rising

Based on Tom Clancy's best-selling novel, *Red Storm* raises submarine simulation to new heights. Players must monitor five types of radar and sonar, five classes of missiles, and three programmable torpedoes. The ocean itself becomes a character in this simulation as you use its characteristics to hide from the enemy and accomplish your mission.

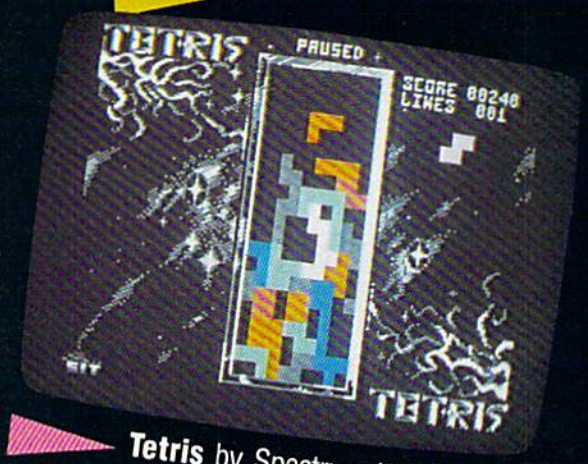
L.A. Crackdown

A new direction for Epyx, this detective drama pits the player against ruthless, international drug dealers in a high-stakes sting operation. As a senior detective with the L.A.P.D., you must gather enough evidence to put away the drug kingpin for life. *Crackdown* is joystick-controlled for ease of operation and includes options for the advanced game player.

Decisive Battles of the American Civil War: Volume II—Gaines Mill to Chattanooga

This simulation presents five battles from the middle years of the Civil War. Adding to the realism are the sorts of problems generals on both sides faced on the battlefield. *Decisive Battles* recreates the conflict between North and South in remarkable detail, using an interface that simplifies and makes more realistic the command criteria. *Decisive Battles* reminds us that innovation remains possible in even the most familiar of formats.

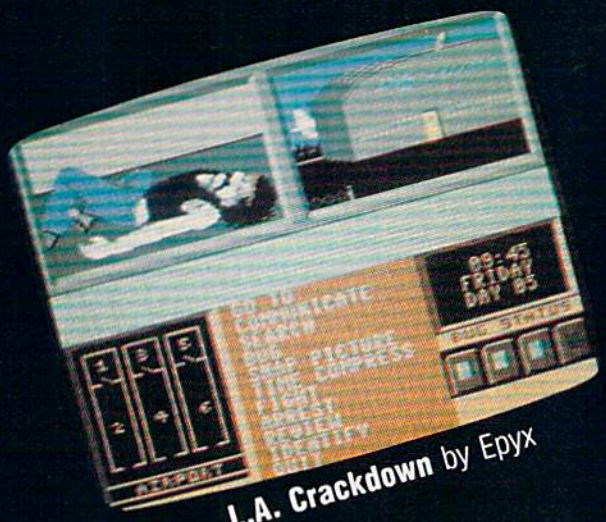
The Train by Accolade



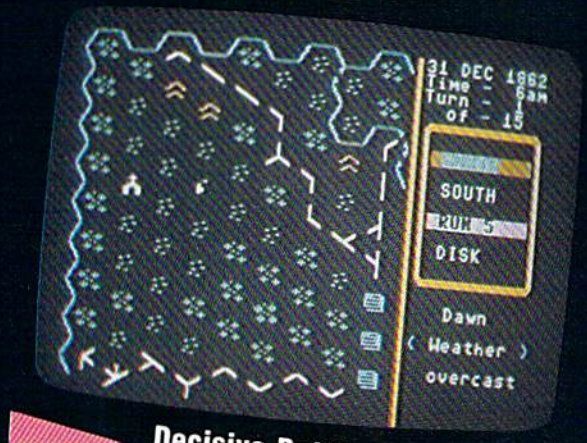
Tetris by Spectrum HoloByte

Zak McCracken by LucasFilm Games

Red Storm Rising by MicroProse



L.A. Crackdown by Epyx



Decisive Battles by SSG

The Three Stooges by Cinemaware

The Three Stooges

Not many attempts to transfer characters from cinema to software have succeeded. This one does. Cinemaware has taken the time and effort to make this game look, sound, and feel like a Three Stooges film. Digitized music, sound effects, and voices from actual movies the trio made for Columbia help add to the slapstick realism.

Publishers' Names and Addresses

Decisive Battles of the American Civil War: Volume II
Strategic Studies Group
Distributed by Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404

L.A. Crackdown
Epyx
600 Galveston Dr.
Redwood City, CA 94063

Red Storm Rising
MicroProse
180 Lakefront Dr.
Hunt Valley, MD 21030

Tetris
Spectrum HoloByte
2061 Challenger Dr.
Alameda, CA 94501

The Three Stooges
Cinemaware
4165 Thousand Oaks Blvd.
Westlake Village, CA 91362

The Train
Accolade
550 S. Winchester Blvd.
San Jose, CA 95128

Zak McKracken and the Alien Mindbenders
Lucasfilm Games
Distributed by Mediagenic
3885 Bohannon Dr.
Menlo Park, CA 94025

Contributors: Robert Bixby; Ervin Bobo; Lance Elko; Keith Ferrell; Steve Hedrick; David Hensley, Jr.; David and Robin Minnick; Tom Netsel; Neil Randall; and Troy Tucker.

DATEL COMPUTERS

AMIGA PRO SAMPLER STUDIO

- A top quality sound sampling system at a realistic price.
- All the usual features of a sampling system plus many more.
- 100% machine code software for realtime functions.
- Hires sample editing.
- Realtime frequency display.
- Realtime level meters.
- Files saved in IFF format.
- Adjustable manual/automatic record trig level.
- Variable sample rate and playback speed.
- Separate scroll line waveform windows plus zoom function with Edit windows for fine accurate editing.
- Hardware compatible with many other software packages.
- Software files can be used within other music utilities.
- Reverse, copy, mix, clear plus other edit facilities.
- Microphone and line input ¼" Jack and Din connections.
- 3D shot of sound waveform. Wave editor to design your own waveforms or adjust existing ones.

ONLY $199.99 COMPLETE SYSTEM, PLEASE STATE A500/1000/2000

MIDI MUSIC MANAGER

- **At last a truly professional Midi package for the Amiga at a realistic price.**
- 8 realtime Midi tracks for record/playback
- Works with standard IFF files
- Adjustable track length – limited only by available memory
- Use as a multi-track Midi recording studio
- Works with many Midi interfaces including Datel Midi Master (see Ad) and Nimetics
- Editing facilities for corrections and track joining etc.
- Internal or External Midi clock control
- Play sampled sounds on Amiga from any Midi track
- Full dubbing – listen to one track while recording another
- Perfect companion for Pro Sampler Studio or any music application

ONLY $59.99

PRINTER CABLES

- 25 pin 'D' to 36 way Centronics parallel lead.
- A 500 or 1000 please state.
- 1.2m length.

ONLY $14.99

- 25 pin 'D' to 25 pin 'D' – serial printer lead.
- A500 or 1000 – please state.
- 2m length.

ONLY $14.99

MIDIMASTER

- Full Midi Interface for A500/2000/1000 (Please state model)
- Compatible with most leading Midi packages (inc. D/Music)
- Midi In – Midi Out x 3 – Midi Thru
- Fully Opto Isolated
- No need to pay more – Full Midi standard

ONLY $59.99

DATA/SWITCH BOXES

- A/B type connect two printers to one computer or (vice-versa).
- Centronics connections or RS232 (Serial) connections (25 pin) please state.

ONLY $34.99

- ABC type connect three printers to one computer (or vice versa).
- Centronics or RS232 connections.

ONLY $49.99

AMIGA BURST NIBBLER

- Superfast disk copier will copy almost any commercial disk.
- Friendly user Interface – Mouse driven throughout.
- Completely compatible with Amiga multitasking system.
- Special 'Strategy Files' cope with even the most advanced protection schemes.
- Fast operation – typically around 80 seconds.
- Even decrypts many encoded programs including D.Print/Video Paint/Music/II etc.
- Works with one drive or two.
- Multiple copy option allows you to make many copies from one original.
- Copy 1 or 2 disk sides – up to 85 tracks.
- Unique 'INFO' analyser – displays vital disk parameters, including sector distribution, data dispersion, etc. etc.
- Special format parameters for non standard formats.
- Full verify option.
- Easy to use Icon driven program takes the mystery out of disk backup.
- Compatible with all Amigas.
- Regular updates available – we always ship the latest.

ONLY $49.99

DATA ACQUISITION UNIT

- Turn your Amiga into a sophisticated measuring instrument capable of measuring a wide range of data inputs.
- Sample and display events from microseconds to hours – with amplitudes from millivolts to 50 volts.
- A Hardware/Software package with very high spec including: –

DIGITAL SCOPE DISPLAY – 2 channel inputs. Manual or continuous display. Timebase 500ms/div to 20μs/div. – accurate to 5%

- 6 bit flash conversion gives 2 millions samples/sec.
- Adjustable trigger level. 5 x zoom function. Memory scan
- Load/Save functions, waveform enhancement, graph displays.
- Hardware contains onboard RAM and Crystal dividers

PLOTTER DISPLAY

- 2 channel display
- Memory recall display
- Timebase range 1 sec to 10hrs per plot.

All features found on units costing thousands of pounds!

ONLY $179.99 for hardware/software/please state A500/1000/2000

ROBOTARM

– Full Function
– 5 Axis Movement

- Explore the fascinating science of Robotics with this full feature Robot Arm.
- Human like dexterity – with 5 Axis of movement it is so versatile. It can manipulate small objects with amazing ability.
- Easily controlled using 2 Joysticks (any 9 pin type) or connect to your Amiga with our Interface + Software to give Computer/Robotic control (see Interface offer).
- Comes with Accessories including 'Finger' Jaws, Magnetic Attachment, Shovel Scoop, 4 Stabilizing Suction Base Legs, etc.
- Uses 4 HP2 batteries (not supplied) to power motor movement so uses no computer power.
- Self contained, ready to use (except batts, joysticks).

Complete with interface/software

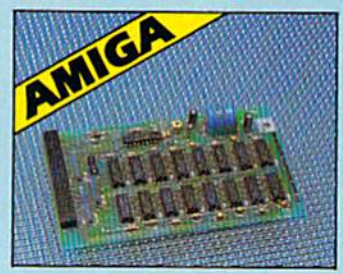
ONLY $129.99

EXTERNAL 3.5" DISK DRIVE

- Single or twin drive models available
- Slimline extra low profile – only 6" long!
- Top quality NEC drive mechanism
- Throughport allows daisy chaining other drives
- Superbly styled case in Amiga colours
- Fully compatible
- 1 meg unformatted capacity per drive
- Good cable length for positioning on your desk etc.
- Twin drive model takes up very little space
- Value for Money – before you buy a drive please compare the features – these drives have NEC mechanisms housed in superb cases. Some products are built to a price and not a standard. Don't spend a few pounds less and end up with 'rubbish' – and remember you are buying from the manufacturer.

ONLY $169.99 SINGLE DRIVE

$299.99 FOR TWIN DRIVE



512K RAM EXTENSION CARD

- Available with/without calendar clock option
- Simply plugs internally into a A500 slot
- Switch in/out with switch supplied
- Fitted in minutes – no soldering etc.
- With calendar/clock onboard time/date automatically booted
- Battery backed to retain time/date

ONLY $69.99 card only 0 RAM

ONLY $89.99 card with clock only 0 RAM

PLEASE PHONE FOR LATEST RAM PRICES.

ORDERS ONLY 1-800-782-9110

NOTE: – Technical or any other type of Enquiry cannot be answered by the staff on this number.

TECHNICAL SUPPORT
CUSTOMER SERVICE
(702) 454-7700

MONDAY THRU SATURDAY 9am to 5pm PACIFIC TIME
EXTRA SHIPPING REQD. OUTSIDE CONTINENTAL U.S.

VISA MasterCard

Add $4.00 Shipping/Handling
CHECKS/MONEY ORDER/CODS ACCEPTED

DATEL COMPUTERS
3430 E. TROPICANA AVENUE,
UNIT #67, LAS VEGAS, NV 89121

TOTAL BACK UP POWER TAKES A QUANTUM LEAP!

ACTION REPLAY IV THE ULTIMATE UTILITIES/BACK-UP CARTRIDGE FOR THE 64/128

• Action Replay allows you to Freeze the action of any memory Resident Program and make a complete back-up to disk or tape – but thats not all . . . . Just compare these features

- Simple Operation: Just press the button at any point and make a complete back-up of any* memory resident program to tape or disk.
- Turbo Reload: All back-ups reload completely independantly of the cartridge at Turbo speed.
- Sprite Monitor: View the Sprite set from the frozen program – save the Sprite – transfer Sprites from one game to another. Wipe out Sprites, view the animation on screen. Create custom programs.
- Sprite Killer: Effective on most programs – make yourself invincible. Disable Sprite/Sprite/Backround collisions.
- Unique Picture Save: Freeze and save any Hires Screen to tape or disk. Saved in Koala, Blazing Paddles Format.

ONLY $59.99

UNIQUE FEATURES:

WARP 25

Loads 50K in under 5 seconds!!

The it true action replay features 'Warp 25' the world's fastest disk serial Turbo. A typical backup will reload in under 5 seconds.

● No additional hardware required ● No special formats ● Super reliable ● Remember this is not a system where files have to be converted — with action replay you simply save directly into Warp 25 status – reload in seconds. ● Backup all your existing programs to load at unbelievable speed!! ● Because AR4 has on board ram it can also load commercial disks directly at 25 times speed.

This is unique to Action Replay!!

● Warp Save/Load Available straight from Basic.

Plus unique Code Cracker Monitor

● Freeze any program and enter a full machine code monitor ● Full Monitor Features — Disassemble, Hex, Find, Jump, Compare, Replace, Two Way Scroll, Full Disk Load/Save, Printer Support etc. In fact all usual monitor commands plus a few others. ● Because of Action Replay's on Board Ram the Frozen program can be looked at in it's ENTIRETY. – In it's Frozen state. That means Video Ram, Zero Page etc. and remember you see the code in it's Frozen state not in a Reset state as with competitors products. ● Restart the program at any point. ● No corruption ● An absolute must for the program Hacker – make changes and see your result's instantly!

POWERFUL DESIGN WITH ON BOARD LSI LOGIC PROCESSOR CHIP PLUS 40K OF ON BOARD ROM/RAM!

- Compactor: Efficient compacting techniques – 7 programs per disk side – 8 programs if you use both sides.
- Single File: All programs saved as a single file for maximum compatibility.
- Dual Commands: A host of additional commands: Renumber, Append, Old, Delete, Linesave, Printer Dump.
- Screen Dump: Print out any Screen to Host or Printers. 16 Gray Scales, Double size print options.
- Unstoppable Reset: Reset button to Rectrieve System and Reset even so called Unstoppable Programs
- Fully Compatible: Works with 1541/C, 1581, 1571 and Datacassette with C64,128, 128D (in 64 Mode)
- Compatible: With Fast DOS and Turbo Rom Systems
- Disk Utilities: Fast Format, Directory, List, Run and many other key commands are operated by Function Keys
- Unique Restart: Remember all of these utilities are available at one time from an integrated operating system. A running programme can be Frozen to enter any Utility and the program is restarted at the touch of a key – without corruption.

LS1 Logic Processor: This is where Action Replay IV gets it's power. A special custom LS1 chip designed to process the logic necessary for this unmatched Freeze/Restart power. No other cartridge has this power!

Action Replay Graphics Support Disk

To help take advantage of action replay's unique power to freeze any screen and save it into your favourite graphics package we have prepared a suite of graphic support facilities.

● **Screen Viewer** View screens in a 'slide show' sequence — Joystick control simple to use. ● **Message Maker** Add scrolling messages to your saved screens with music, very easy to use. ● **Prosprite** A full sprite editor, modify/save/load feature, full edit facilities. ● **Zoom Lens** Explode sections of any saved screen to full size including Border — Superb fun and very useful.

ONLY $19.99

CENTRONICS PRINTER LEAD

- Take full advantage of Action Replay or Final Cartridge screen dump features with this centronics lead.
- Connects user port to any full size Epson compatible printer.

ONLY $18.99

SUPERCRUNCHER

- A utility to turn your Action Replay into a super powerful program compactor. Reduce programs by up to 50%! Save disk space and loading times. Can even further compact programs already crunched by Action Replay's own compactor.

ONLY $9.99

NOW WITH RAMLOADER™

- Not only can Action Replay load your backups at 25 times normal speed ... Now with the new RAMLOADER feature you can also load most of your commercial originals also at 25 times faster!
- Making use of our special LSI logic processor and 8K of onboard Ram Action Replay now offers the world's fastest Disk Serial Turbo.

ORDERS ONLY 1-800-782-9110

NOTE: – Technical or any other type of Enquiry cannot be answered by the staff on this number.

TECHNICAL SUPPORT CUSTOMER SERVICE (702) 454-7700

MONDAY THRU SATURDAY 9am to 5pm PACIFIC TIME
EXTRA SHIPPING REQD. OUTSIDE CONTINENTAL U.S.

DATEL COMPUTERS

FINAL CARTRIDGE III

- Give your C64/128 an "Amiga Look Alike" environment. Pull down windows/icons.
- PLUS a huge range of utilities all built into this one cartridge . . . including:
- Freezer option to freeze and copy most any memory resident program.
- Full machine code monitor with all the usual commands and more.
- Unique picture print dump – compressed/enlarged.

Plus other effects.

- Fast loader – loads commercial software at up to 15 times normal speed.
- Range of desk-top type tools – clock, calendator, desktools etc. etc.
- Final Cartridge 3 is a superb utilities cartridge with an added bonus of a freezer function.

ONLY $54.99

TOOLKIT IV

The ultimate disk toolkit for the 1540/1541

- A disk toolkit is an absolute must for the serious disk hacker. Toolkit IV has more features than most for less.
- DISK DOCTOR V2 – Read and write any track and sector including extra and renumbered tracks. Repair damaged sectors. Look underneath read errors.
- HEADER/GAP EDITOR – Decodes and displays ALL header information including off bytes and header gap. Rewrite the entire header and header gap. Renumber sectors. Also edit any sector tail gap.
- DISK LOOK – Sort directory. Recover lost files. Display file start/end addresses. Disassemble any file program directly from the disk to SCREEN or PRINTER including undocumented opcodes. Edit Bam. Much, much more.
- FILE COMPACTOR – Can compact machine programs by up to 50%. Saves disk space. Compacted programs run as normal.
- FAST DISK COPY – Copy an entire disk in 2 minutes or less using single 1541.
- FAST FILE COPY – Selective file copy. Works at up to 6 times normal speed.
- FORMASTER – 10 second format an entire disk or format any individual track or half track 0 to 41. Redefine any of 30 parameters to create or recreate unique disk formats.
- ERROR EDIT – Quickly find and recreate all read errors including extra and renumbered tracks or sectors and half tracks from 0 to 41. Even recreates data under errors and allows you to redefine any necessary parameters.

ONLY $14.99

DIGITAL SOUND SAMPLER

- The new sampler allows you to record any sound digitally into memory and then replay it with astounding effects.
- Playback forwards/backwards with echo/reverb/ring modulation.
- Full 8 bit D to A & ADC conversion.
- Midi compatible with suitable Midi interface. (see Ad')
- Full sound editing and realtime effects menu with waveforms.
- Powerful sequencer plus load/save functions.
- Line In/Mic In/Line Out/Feedback controls.
- Complete hardware/software package.

ONLY $89.99

MIDI 64

- Full specification MIDI interface at a realistic Price.
- MIDI IN - MIDI OUT - MIDI THRU

Compatible with most leading MIDI software.

ONLY $49.99

TURBO ROM II

Turbo Rom II is a replacement for the actual kernal inside your 64. It provides superfast load/save routines.

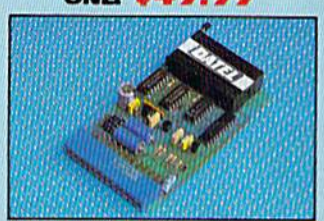
- Loads/Saves most programs at 5-6 times normal speed.
- Improved DOS support including 10 sec format.
- Programmed function keys:- load, directory, old, etc.
- Return to normal kernal at flick of a switch.
- FCOPY – 250 block file copier.
- FLOAD – special I/O loader.
- Plus lots more.
- Fitted in minutes – no soldering usually required. (On some 64's the old ROM may have be desoldered).

ONLY $24.99

256K SUPEROM EXPANDER

- Now you can select from any of 8 32K EPROMs
- 8 sockets to accept upto a 32K EPROM in each.
- On board operating system – no programs to load.
- Program your own EPROMs using our EPROM programmer.
- No need to have loads of cartridges – just make a selection from the Superom menu.
- Directory of utilities on power up.
- Fully menu driven on power up.
- Select any slot under software controls.
- Unique EPROM generator feature will take your own programs – basic or m/c and turn them into autostart EPROMs. (EPROM burner required).
- Accepts 2764/27128/27256 EPROMs.

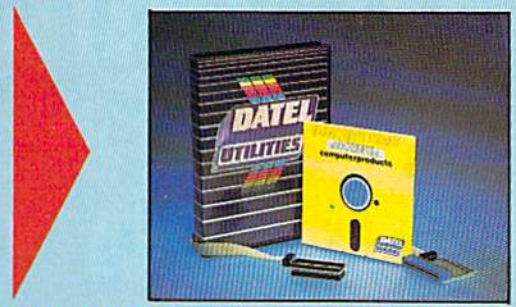
ONLY $49.99



EPROMMER 64™

- A top quality, easy to use EPROM programmer for the 64/128.
- Fully menu driven software/hardware package makes programming/reading/ verifying/ copying EPROM's simplicity itself.
- Will program 27256 chips. 12.5, 21 or 25 volts.
- Fits into user port for maximum compatibility with cartridges/Superom Board etc.
- Full feature system – all functions covered including device check/verify.
- We believe Eprommer 64 is the most comprehensive, most friendly and best value for money programmer available for the 64/128.
- Ideal companion for Superom Board. Cartridge development System, our kernal expanders or indeed any EPROM base project.
- Comes complete with instructions – plus the cartridge handbook.

ONLY $69.99 COMPLETE



DEEP SCAN BURST NIBBLER™

- The most powerful disk nibbler available anywhere, at any price!
- Burst Nibbler is actually a two part system – a software package **and** a parallel cable to connect the 1541/1570/1571 to 64/128 (state type).
- What gives Burst Nibbler its power? Conventional nibblers have to decode the data from the disk before it can transfer it using the serial bus – when non standard data is encountered they are beat. Burst Nibbler transfers data as raw GCR code via the parallel cable without the need to decode it so you get a perfect copy of the original.

- Will nibble upto 41 tracks.
- Copy a whole disk in under 2 minutes.
- Full instructions.
- Regular updates – we always ship the latest.
- Fitted in minutes – no soldering usually required.
- Full or $\frac{1}{2}$ tracks.
- No need to buy parallel cable if you have Professional DOS etc.
- Cable has throughbus extension for other add ons.

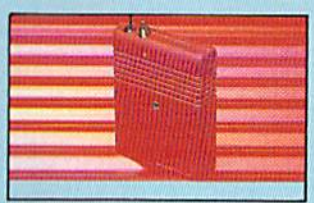
ONLY $39.99 COMPLETE

SOFTWARE ONLY $19.99 CABLE ONLY $19.99

BURST NIBBLER PARAMETER DISK

- Burst Nibbler is the most powerful Nibbler around – but even the best can be better.
- This disk contains dozens of parameters specially written for the protection schemes impossible to Nibble. These are mainly 'V-max' and 'Rapidlock' and include titles such as 'Defender of the Crown', Gauntlet etc.
- Regularly updated to include any new titles.
- This disk is by no means a necessity – the standard Burst Nibbler will copy 99% of software as is – if you want to go to the limits, this is the product for you!

ONLY $14.99



SMART CART

- NOW YOU CAN HAVE A 32K CARTRIDGE THAT YOU PROGRAM LIKE RAM THEN ACTS LIKE ROM!
- 32K pseudo ROM – battery backed to last up to 2 years (lithium battery).
- Simply load the program you require – then flick the switch. The cartridge then acts like a ROM cartridge and can even be removed.
- Make your own cartridges – even auto start types, without the need for an Eprom burner.
- Can be switched in/out via software.
- I/O2 slot open for special programming techniques.

ONLY $59.99

DUPLIKATOR

- Duplikator is a mass disk copier ideal for clubs, user groups etc.
- Comes with 256K on board RAM and it's own built-in operating system – no software to load.
- Makes entire backups in 8 seconds!!
- Multiple copies from one original – over 250 disks per hour. Full verify option.
- Copies upto 40 tracks and can cope with standard disk errors 21-29.
- The most price effective method of mass duplication available.

ONLY $189.99

EXTERNAL 3.5" DISK DRIVE

- Slimline extra low profile unit – only 6" long!
- Top quality NEC drive mechanism.
- Throughport allows daisychaining other drives.
- A superbly styled case finished in amiga colours.
- Fully compatible.
- 1 meg unformatted capacity.
- Good length cable for positioning on your desk etc.
- Complete – no more to buy.

ONLY $169.99 SINGLE

ONLY $299.99 DUAL

MIDIMASTER

- Full Midi Interface for A500/2000/1000 (Please state model).
- Compatible with most leading Midi packages (inc. D/Music).
- Midi In – Midi Out x 3 – Midi Thru.
- Fully Opto Isolated/Full MIDI.

ONLY $59.99

VISA® MasterCard

Add $4.00 Shipping/Handling

CHECKS/MONEY ORDER/CODS ACCEPTED

DATEL COMPUTERS

3430 E. TROPICANA AVENUE, UNIT #67, LAS VEGAS, NV 89121

Announcing COMPUT

Preview and sample up to $200 worth of
and produced by some of the best software

Silent Service
Exhilaration & Tension! New submarine simulation genuinely recreates World War II underwater warfare. From MicroProse.

John Elway's Quarterback
Ground-pounding excitement! Faithful computer version of the #1 arcade winner, by the game's premier quarterback, John Elway. From Melbourne House.

Gunship
Revolutionary 3-D graphics & outstanding joystick firing system! Realistically simulates AH-64 Apache helicopter. From MicroProse.

Pirates!
Search and plunder! Become a 17th century pirate captain searching the Caribbean for ships and cities. From MicroProse.

Airborne Ranger
Fast-paced action-simulation! Danger & excitement of combat and infiltration as a single soldier controllable in 8 directions. From MicroProse.

Caveman Ugh-lympics
Hilarious Neanderthals! Go for the gold in this precursor to modern olympics. From Electronic Arts.

Project Stealth Fighter
Experience the thrill! Pilot a state-of-the-art U.S. Air Force COSAIR (covert, survivable, in-weather, recon) strike fighter. From MicroProse.

Experience, try out and get a taste of challenging game demos, realistic simulations, and more. This is your chance to check out hundreds of dollars worth of software programs from a special group of commercial software developers participating in *COMPUTE!'s Demo Disk Pack* promotion.

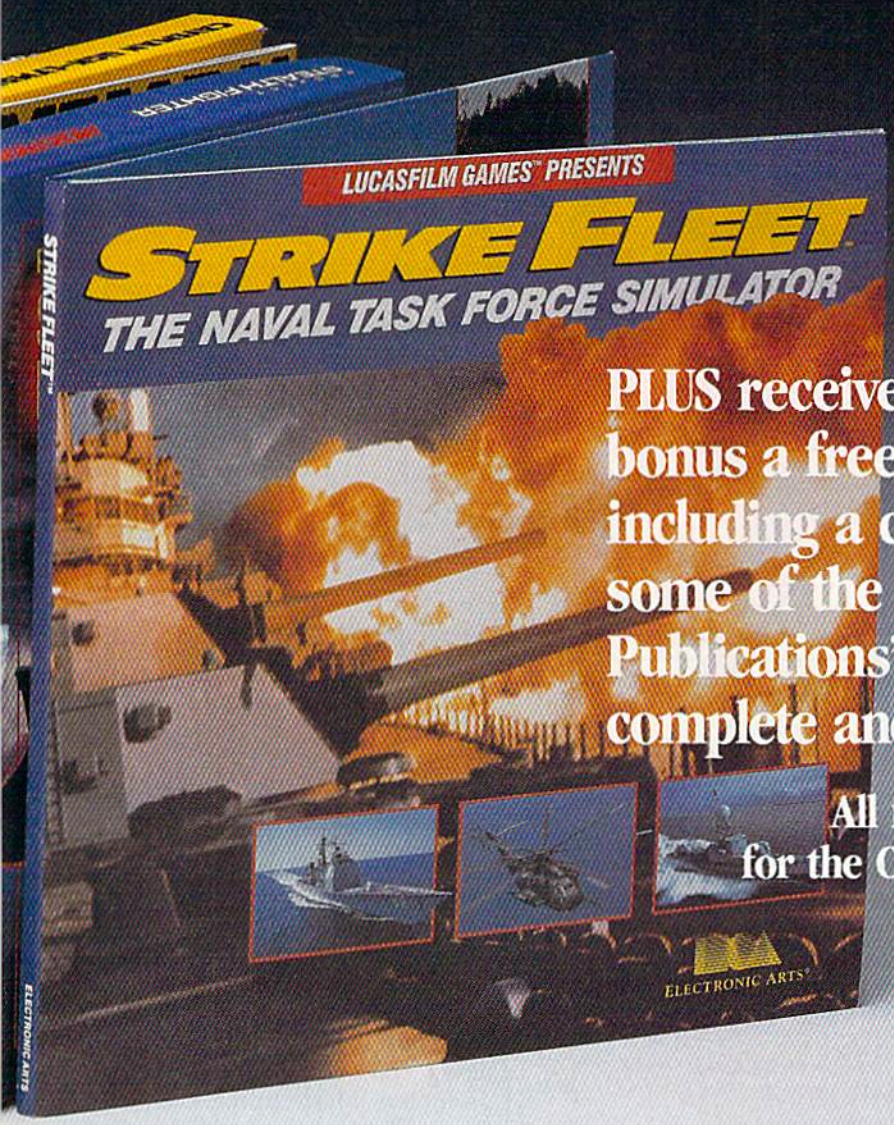
To boot, receive your own complete samples of some of the best COMPUTE! disk programs ever published . . . with our compliments.

We can't think of a better way to help you decide what software to buy. But hurry! This offer expires January 31, 1989. Order your own *Demo Disk Pack* today. And order some for your friends. They make great gifts.

***Each Demo Disk Pack contains 4–6 disks. All MicroProse programs are contained on one disk.**

E!'s Demo Disk Pack!

the latest commercial software— developed houses in the personal computer industry...



PLUS receive as a special bonus a free COMPUTE! sampler including a cross-section of some of the best of COMPUTE! Publications' own disk programs, complete and ready to run.

All for only $9.95 for the Commodore 64/128.

Strike Fleet
Hunt down the enemy! Command a high-tech naval task force. Your treacherous theaters of operation: the Persian Gulf, the Falklands, or the North Atlantic. From Electronic Arts.

Here's all you do. Send $9.95 plus $2.00 postage and handling to:

COMPUTE!'s Demo Disk Pack
Dept. G
P.O. Box 5188
Greensboro, NC 27403

(New York City residents add 8¼% per demo disk.)
(North Carolina residents add 5¼% per demo disk.)

COMPUTE! Publications, Inc. abc
One of the ABC Publishing Companies
A part of Capital Cities/ABC, Inc.

Tighten the ropes around your 64—wrestling has arrived on disk. It's not a sport for the faint of heart, as our intrepid sports reporter discovered during the legwork for this piece. Live, more or less, from ringside, a look at the world of professional wrestling, software style. . . .

Extravagance!

That's professional wrestling in a word and a punctuation mark. There's nothing subtle about the sport or its superstars. Half circus, half Circus Maximus, pro wrestling misses no opportunity to milk a drama from its trappings, and neither does the software it has inspired. We're talking tightened turnbuckles here, canvas stretched drum taut, perfect profiles and massive muscles oiled for best effect.

With one foot in show biz and one in athletics, wrestling was made for TV, and made, not incidentally, for the disk drive.

The matchup of software and suplexes—not to mention elbow drops, clotheslines, pile drivers, and body blocks—is currently fostering competition among several promoters. Mastertronic, Data East, Epyx, Mindscape, Gamestar, and MicroLeague Sports have all tossed their hats into the ring. Just as the WWF (World Wrestling Federation, or does your TV stay off on weekends?) and the NWA (National Wrestling Alliance) each has its own sense of style, the designers and publishers of wrestling software bring distinct approaches to this gaudiest of sports.

The programs do have a few things in common. All use some sort of endurance meter to let players know how much strength

they've got left. With one exception, wrestling software is joystick-intensive, with moves that demand split-second timing and solid eye-hand coordination.

Other than that, and a certain flair for the, shall we say, melodramatic, the games are distinctive. Here are the current top arenas for software wrestling.

Cage Match

Not every bout is for title stakes, nor is every arena Trump Plaza. Most wrestlers start their careers in backwaters; more than a few end there. One such lower-key coliseum can be found in Mastertronic's *Cage Match*. The milieu here is galactic—half a dozen of the cosmos's toughest wrestlers have been gathered for a test of their skills.

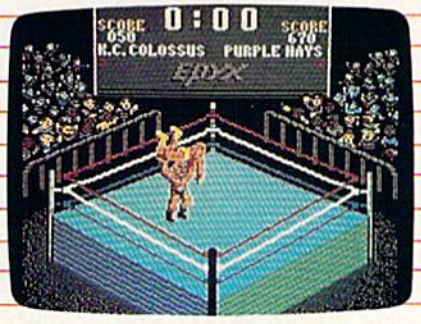
Their skills, as it turns out, are a bit limited. Colorful creatures of various species—including one human—slug it out in semislow motion, although one could attribute this to local gravitational conditions.

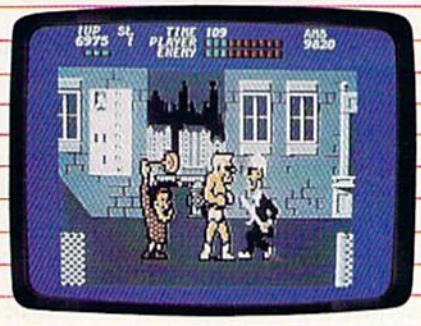
As a *Cage Match* wrestler, your goal is not to pin the opponent, but to stun him long enough for you to climb out of the cage. The winner moves on to the next bout; the loser is vaporized when the mat goes radioactive.

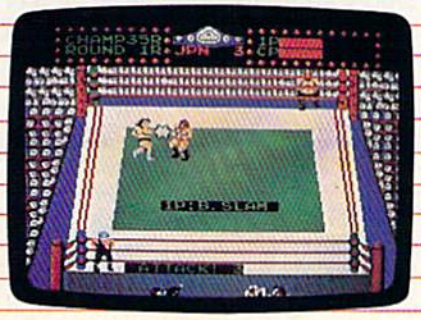
The game is accompanied by several other nonwrestling games, some of them quite good, on Mastertronic's *Megaplay* Volume 1.

Tag Team Wrestling

One-on-one wrestling may show the sport at its purest, but tag-team bouts boast their own attraction. In a four-man matchup, you can be dragged to the edge of your bleacher as your hero gets his stuffing knocked out; then rise, cheering as his partner surges to the rescue at the last minute. (More likely is the scenario where your hero is wrestling fair and square, and the opponent's partner blindsides him.)







Both aspects are nicely captured in Data East's *Tag Team Wrestling*. It's Ricky's Fighters vs. Strong & Bad—no alternate teams here.

Fortunately, both teams bring a lot of flair to the mat, with Ricky and his partner Ultramachine representing good, and Worly and Mascross being more masterful at the sport's darker aspects. The object is the classic one: Pin the other guy for a threecount.

Getting there, as they say, is half the fun. Wrestlers can dive out of the ring in search of weapons such as two-by-fours, chairs, and lead pipes. There are secret moves, as well as the more traditional drop kicks, neck hangings, back breakers, and body slams.

The game offers the chance to advance to World, and then to Super, Champion. But take it from me, it won't be easy.

Bop 'n Wrestle/Bop 'n Rumble

Wrestling is theater as much as it is sport. And where there is theater, there are prima donnas—the gorgeous wrestlers, the ones who spend as much time in front of the mirror as on the mat. Mindscape's *Bop 'n Wrestle* stars one of these. Gorgeous Greg is a blond hunk of vanity and destruction, coiffured and oiled for the cameras, not to mention his opponents.

There are fully eight of those opponents in this game, ranging from Bad Barney Trouble to Redneck McCoy to Angry Abdul. Each wrestler appears in character costume, with just enough exaggeration to capture the sort of hyperbole that has made real-world wrestling so popular.

Bop 'n Wrestle also packs a full array of high-energy moves—Airplane Spins, a Flying Body Press, the classic Atomic Drop, and the rarely seen but always agonizing Reverse Suplex. No pain, no gain.

The theatrical side of wrestling

is nicely captured in *Bop 'n Wrestle*, as in most of these programs, but the social concerns voiced by the wrestlers rarely get their due. One place they do is in *Bop 'n Rumble*. Gorgeous Greg is on the streets this time, out to right wrongs, break a few bad guys' arms, and save some little old ladies from distress. The action is furious and hilarious, and Mindscape is serious when it advises you *not* to pick on the old ladies. (You will, though; everybody does. And, trust me, the old ladies will make you pay.)

Championship Wrestling

Nicely capturing many of the more deadly and deranged aspects of professional wrestling, Epyx's entry also offers the most challenging joystick commands. *Championship Wrestling* offers players their choice of eight separate wrestlers or offers 2–8 players the chance to put together their own cards.

Those cards can be pretty exciting, with wrestlers having not only the traditional arsenal of moves but also a custom move apiece. There's Purple Hays, master of the Ghetto Blaster, or Zeke Weasel, whose Stomp looks like it sounds, or Prince Vicious, known for the Vicious Circle which combines an airplane spin with an atomic drop for awesome destructive effect.

Animation is superb, and the joystick routines are sensible if complex. Some moves, in fact, require putting together a combination of joystick and fire-button moves, letting you build momentum for the big moment when you slam your opponent to the mat. Successfully executed moves earn points, with the computer keeping score. Because of the complexity, Epyx has wisely included a practice mode. Try it—you'll need it.

Don't let the sophisticated joystick routines scare you off. You can do quite well by just grabbing the stick, putting your thumb on the button, and wading in.

(For those preferring a touch of the exotic in the wrestling, don't miss the Sumo match in Epyx's *World Games*.)

Take Down

Look out, WWF, the GWF (Gamestar Wrestling Federation) is out to steal the spotlight.

And it just might succeed. Previewed in a beta version, Gamestar's *Take Down* proves that there's plenty of life left in Commodore animation, and every bit of that life has been put into the ring. Some of the moves in this game are so smoothly executed that you'd swear you were watching a cartoon.

You're not. This is down-and-dirty wrestling at its best. No score-keeping, no points for good form. The object is to pin the opponent to the mat. The game's eight wrestlers include Mr. Cool, Sgt. Slam, Sea Dawg, and Ninja, each well characterized, each with his own set of four custom moves as well as the basics. Some of the custom moves include the Wrench Suplex, yet another variation on one of wrestling's grandest body breakers.

Take Down not only provides ample opportunity to hurt the other guy, you can also hurt yourself. The "big splash" leap from the ropes is a great way to flatten your opponent—unless you miss, in which case it's *your* energy meter that dwindles.

The meter will dwindle plenty without your help. The newest of the animated wrestling programs, this is also one of the fastest paced. Don't enter the ring until you're ready. And even then, be prepared for some of the fiercest competition currently available.

MicroLeague Wrestling

Wrestling is also a strategic event, an approach taken to good effect on MicroLeague Sports' distinctive disk. This product bears the official endorsement of the WWF and comes complete with the digitized images and moves of some of the Federation's greatest stars. Hulk Hogan himself is here, along with Paul "Mr. Wonderful" Orndorff, and Randy "Macho Man" Savage, accompanied, of course, by his manager, the beautiful Miss Elizabeth. Coloring the action is commentary from Vince McMahon, Jesse Ventura, and Bruno Sammartino.

MicroLeague gives you its wrestling straight (or at least as straight as pro wrestling itself) with details ranging from the stars' processional into the arena to recreations of the actual moves they pit against each other. Bouts are timed, letting you decide on their length. Will it be a 10- or 20-minute strength spree, or an hour-long grudge match, with each maneuver carefully planned?

This is one game that doesn't rely on eye-hand-joystick skills, meaning it's the one where I'm most evenly matched with my ten-year-old wrestling-fanatic son. Players must select moves from their wrestler's menu bar. Once both players—or one player and the computer—have made their choice, the results are announced. Can Randy Savage's Snap Mare succeed against the Hulkster's Head Smash? What's the likelihood of Hulk pulling off a clothesline in the face of Orndorff's Eye Rake? The computer plots the results, announces the winner, and then presents a series of digitized images and sound effects that show the move's several stages. There are moments when you'll be convinced you're at ringside.

And the drama will soon be enhanced. MicroLeague's original disk will soon be joined by an add-on disk bringing new wrestlers to the Commodore arena. Hacksaw Jim Duggan on disk—what more could any wrestling fan ask?

Stay tuned. Something tells me that wrestling—on disks and on the tube—is here to stay.

"It wins my vote for *Adventure Game of the Year.*"
-William "Biff" Kritzen, *Computer Gaming World*

HOT. MEAN. RADIO-ACTIVE.

WASTELAND

AUGUST 20, 2087

Nothing could be worse than this god-forsaken, radioactive desert.

More Sniperdroids! All tracking me with them death glares. And them Uzis. They're weird trigger-twitchin' folks. I suspect it's them poisoning the water.

Or maybe it's those Leather Thugs. Heck, I don't know anymore. I heard they have a bunch of civilians cut off east of Ranger Center, which is where I'm headed. Hope not. They want me dead. Like every other mutant this side of Vegas.

The worst part is, I'm getting to be as bad as they are. You wouldn't believe some of the ways I've learned to kill. I hang out in sewers, and my best friend is a MAC 17 submachine gun.

Gramps talked about life before the nuclear war. All I know is I don't want others living this way. Gotta rebuild this desert right. Gotta make it so you can sleep with your eyes closed.

CYBORG SAM has achieved the rank of Lance Corporal. You get 2 adventure points to distribute among your stats.
Ranger Ctr.
(RETURN)

WASTELAND.™ A new role-playing game from the creators of the Bard's Tale™ series.

3 WAYS TO ORDER: 1) Visit your retailer. 2) Call 800-245-4525 from U.S. or Canada, 8am to 5pm PST to order by VISA/MC. 3) Mail check (U.S.$) or VISA/MC #, cardholder name, and exp. date to Electronic Arts Direct Sales, P. O. Box 7530, San Mateo, CA 94403. Apple II version $49.95, Commodore version $39.95, plus $3 shipping/handling. CA residents add 6.5% sales tax. Allow 1–3 weeks for U.S. delivery.

ELECTRONIC ARTS®

Apple II is a registered trademark of Apple Computer, Inc.
Commodore is a registered trademark of Commodore Business Machines Ltd.

KONAMI HITS ARE HEADING HOME.

With our new software, your favorite arcade games come alive on your home computer.

If you own an IBM, Amiga or Commodore computer—Watch out! Because 4 of Konami's most awesome adventures are about to invade.

You'll confront the missions you've dreamed of in Rush 'N Attack, Contra, Jackal and Boot Camp. And you'll find yourself face to face against unequaled challenges, with incredible graphics, awesome music, and sound effects that'll blow you away.

So check out Konami's newest action wherever great software is sold. And be prepared for war.

KONAMI®

Konami® is a registered trademark of Konami Industry Co. Ltd. Rush 'N Attack,™ Contra,™ Jackal™ and Boot Camp™ are trademarks of Konami Inc. I.B.M.® is a registered trademark of International Business Machines Inc. Amiga® and Commodore® are registered trademarks of Commodore Business Machines Inc. Screens shown were photographed on an Amiga system.

YOU'LL FIND KONAMI GAMES IN THESE STRATEGIC LOCATIONS.

BABBAGES

CHILD WORLD AND CHILDREN'S PALACE

ELECTRONICS BOUTIQUE

FEDCO STORES

LIONEL KIDDIE CITY, LIONEL PLAYWORLD AND LIONEL TOY WAREHOUSE

TOYS "R" US

WAREHOUSE ENTERTAINMENT

ZAYRE
(Boston and Washington D.C. Area Stores Only.)

Attention Dealers:
For further information on Konami's line of computer games, call customer service at (312) 595-1443.

KONAMI®

Only Rush 'N Attack and Contra will be available for Amiga in 1988. ©1988, Konami Inc.

ARIZONA
MESA
Compute or Play
1000 Fiesta Mall

CALIFORNIA
BAKERSFIELD
Software Etc.
2701 Ming Ave.
V. Plaza

CHULA VISTA
R & R Software
1048 3rd Ave.
(619) 426-7011

CITY OF INDUSTRY
Software Etc.
Pomona Hwy. at Azusa

FOSTER CITY
Home Computing Center
1125 E. Hillsdale Blvd., #103

SAN DIEGO
Computer Outlet
7940 Silverton Ave.
(619) 740-0113

SUNNYVALE
HT Electronics
346 W. Maude
(408) 737-0900

TORRANCE
The Warehouse
19701 Hamilton Ave.
(213) 538-2314

CONNECTICUT
DARIEN
Walden Software
800 Post Road

NEW BRITAIN
Romek Home Computer
432 W. Main St.

FLORIDA
GAINESVILLE
Florida Bookstore
1614 W. University
(904) 376-5606

LAUDERDALE LAKES
Software City
3700 W. Oakland Park Blvd.
(305) 735-6700

PANAMA CITY
Gulf Coast Computers
674 W. 23rd St.

PLANTATION
Software Software
612 Broward Mall
(305) 476-0595

WEST PALM BEACH
Computers 4 Rent
2695 N. Military Trail
(407) 471-1976

ILLINOIS
AURORA
Micro-Tech Solutions
991A Aurora Ave.
(312) 892-3551

CANTON
Blessman's Inc.
175 S. Main

CHICAGO
Software Plus
6212 N. Western Ave.
(312) 338-6100

DANVILLE
Data Center
108 N. Vermilion

HANOVER PARK
Software Plus West
2001 Irving Park
(312) 837-6900

LOVES PARK
Union Hall Inc.
6321 N. 2nd St.

SPRINGFIELD
Illini Software Center
2036 S. McArthur

WHEELING
Software Plus
731 W. Dundee Rd.
(312) 520-1717

INDIANA
PLAINFIELD
Simply Software
311 Gordon Dr.

KENTUCKY
LEXINGTON
Computer Dimensions
171 W. Lowry Ln.

LOUISIANA
SHREVEPORT
Discount Computer Software
544 E. King's Hwy.

MAINE
BELFAST
Skylight Software
22 Miller St.
(207) 338-1410

CARABOO
Mementos
86 Sweden St.
(207) 498-3711

WESTBROOK
Hands On Computers
861 Main St.
(207) 854-1155

MASSACHUSETTS
PITTSFIELD
Nichols Electronics
274 Wahconah St.
(413) 443-2568

WELLESLY
Memory Location
396 Washington St.
(617) 237-6846

WORCESTER
The Software Shop
84 Pleasant St.
(617) 791-5905

MICHIGAN
CLAWSON
Software Trends
230 S. Main St.

CLIO
The Edge Connector
124 North Mill
(313) 686-1070

FLINT
I/O Software
G-3304A Corunna Rd.

GARDEN CITY
Soft-House Computer Center
32647 Ford Rd.
(313) 522-3015

TRAVERSE CITY
The Software Shop
710 Centre St.

MISSOURI
CAPE GIRARDEAU
Midwest Computers
203 West Park Mall
(314) 339-0022

NEW JERSEY
BRIDGEWATER
Software Etc.
400 Commons Way

WAYNE
Software Etc.
Willowbrook Mall

NEW MEXICO
ALBUQUERQUE
Page One
11200 Montgomery N.E.
(505) 294-2026

NEW YORK
ALBANY
Computer Cellar
911 Central Ave.
(518) 482-1462

BAY SHORE
Software Etc.
1701 Sunrise Hwy.

CHEEKTOWAGA
Papa's Computerware
2789 Union St.
(716) 684-7272

FLUSHING
Software Etc.
39-01 Main St.

HIGHLAND FALLS
Software Affair
188 Main St.
(914) 446-4121

HOLBROOK
Great Escapes
5801 Sunrise Hwy.

KENMORE
Software Supermarket
3670 Delaware Ave.
(716) 873-5321

LATHAM
Contemporary Computers
893 Loudan Rd.
(518) 783-1088

NEW YORK CITY
J&R Music World
23 Park Row
(212) 732-8600

Leigh's Computer
1475 Third Ave.
(212) 879-6257

RIDGEWOOD
Quo Vadis
70-20 Fresh Pond Rd.

ROCHESTER
Leon's Computer Mart
103 Clinton Ave.
(716) 325-2787

SCOTIA
Select Software
108 Mohawk Ave.
(518) 382-7886

OHIO
DAYTON
Microtyne
4049 Marshall Rd.

FAIRFIELD
Microware Magic
6625 Dixie Hwy.
(513) 874-6560

MEDINA
Ram-Run Computer Products
891 N. Court
(216) 263-4428

PENNSYLVANIA
WEST REDDING
English's Computers
608 Penn Ave.

RHODE ISLAND
WARWICK
Software Connection
101 W. Natick Rd.

WOONSOCKET
Galaxy Computers
332 River St.

TEXAS
BEAUMONT
Software Rental
2855 Eastex Freeway #D

FORT WORTH
Wedgewood Software
5312 Woodway
(817) 292-7353

HOUSTON
Floppy Wizard
271 Memorial
(713) 461-8660

SAN ANTONIO
Computer Experience
5525 Blanco
(512) 340-2901

UTAH
SALT LAKE CITY
Armadillo Brothers
3330 S. State
(801) 484-2791

VIRGINIA
MARTINSBURG
My Software Heaven
Meadowlane Plaza Box 2
(304) 263-1228

WOODBRIDGE
Virginia Micro Systems
13646 Jefferson Davis Hwy.
(703) 491-6502

WASHINGTON
LONGVIEW
Software Depot
1310 Oceanbeach Hwy.

LYNWOOD
Family Computers
3333 184th St. S.W.
(206) 775-3530

PACOMA
Nibbles & Bytes
4020 S. Steele St. #105

SEATTLE
Omni International Trading Post
3826 Woodland Park Ave. N.
(206) 547-6664

VANCOUVER
Software Support Int.
2700 N.E. Andreison D13

WISCONSIN
JANESVILLE
Romeyn Software
2100 E. Milwaukee

MILWAUKEE
Computer Software Center
10710 W. Oklahoma Ave.

RACINE
Computer Paradise
4901 Washington Ave.

GAZETTE
Readership Survey

What do you like most about *COMPUTE!'s Gazette?* And what don't you like? We want this magazine to be as useful and interesting as possible, and to provide you with the coverage you want most.

Please take a moment to fill out and mail us this questionnaire (photocopies are fine). Some questions may require more than one answer.

Mail questionnaires to *GAZETTE Readership Survey, P.O. Box 5406, Greensboro, NC 27403.*

What computer(s) do you own or use?

☐ 128
☐ 64
☐ Plus/4
☐ 16

Do you own or use a computer not listed above?

☐ Yes (please specify) _____

_____

_____

☐ No

Do you plan to purchase another computer within the next year?

☐ Yes
☐ No
☐ Undecided

If you answered yes to the above question, which computer do you plan to buy? _____

Do you use *GEOS*?

☐ Yes
☐ No

Are you a member of a Commodore user group?

☐ Yes
☐ No

Which of the following peripherals do you own or use with your computer?

☐ Dot-matrix printer
☐ Letter-quality printer
☐ Modem
☐ Memory expansion

What types of software have you purchased in the past year?

☐ Word processor
☐ Programming language
☐ Graphics design
☐ Telecommunications
☐ Education
☐ Games
☐ Business applications
☐ Other
☐ None

Which language do you prefer for programming?

☐ BASIC
☐ Machine language
☐ Other
☐ I don't program my computer

Which part of the magazine do you like most? (Check no more than two.)

☐ Features
☐ Reviews
☐ Games
☐ Programming
☐ Departments
☐ Advertisements

Which columns do you read regularly?

☐ Feedback
☐ D'Iversions
☐ Horizons
☐ The GEOS Column
☐ BASIC for Beginners
☐ Machine Language Programming
☐ The Programmer's Page
☐ News & Products

What topic(s) would you like to see covered regularly in a column?

_____

_____

_____

Do you use programs published in GAZETTE?

☐ Yes
☐ No

If so, how do you obtain copies?

☐ Type them in
☐ GAZETTE Disk
☐ Other (please specify) _____

_____

_____

Additional comments:

_____

_____

_____

FAST DELIVERY, FREE GAMES and LOWER PRICES

ONLY FROM tcp & Commodore®

Commodore® COLT™

The Complete IBM® Compatible Machine For The Whole Family!

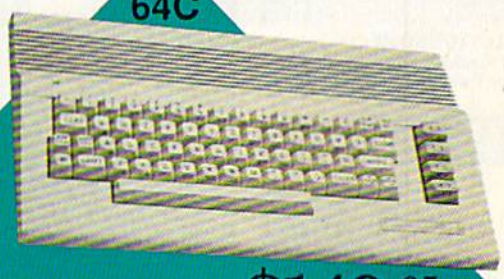
$699

w/o Optional Commodore 1084 Color Monitor

- 640K RAM/Dual Floppy Drives
- Dual Speed - 4.77 & 8MHz
- Parallel, Serial & Mouse Ports
- Built-In Monochrome/Color Video Card
- Includes MS-DOS 3.2

With Commodore 1084 Color Monitor	$995
With Samsung Color Monitor	$899
With Hi-Resolution Monochrome Monitor	$769

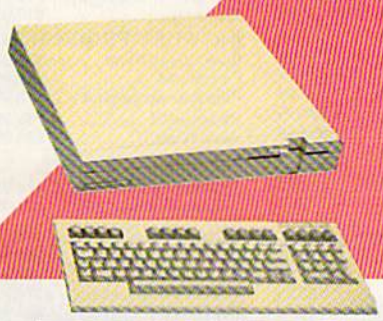
Commodore® 64C



Includes GEOS & Quantum Link **$149.95**

64C w/1541 II Disk Drive	$309
64C w/1541 Drive &1802C Monitor	$519

Commodore® 128D

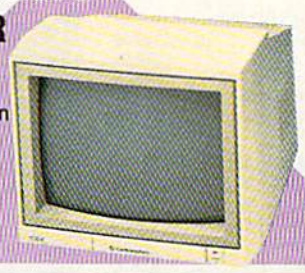


- 128K Memory
- Built-In 1571 Disk Drive
- Detachable Keyboard

$439

128D w/Commodore 1084 Color Monitor	$719
128D w/Magnavox 8762 Color Monitor	$679

Commodore® 1084 COLOR MONITOR



- 640 x 400 Resolution
- 4 Operating Modes

$299

MAGNAVOX 8762 ■ 640 X 240 Resolution ■ 3 Modes ■ 1 Yr Warranty	$249
MAGNAVOX 8702 ■ 350 x 330 Resolution ■ Tilt Stand ■ 1 Yr Warranty	$179
COMMODORE 1802C Color Monitor	$199

FREE COMMODORE GAMES WITH ANY PURCHASE!

See Following Pages For Details

Commodore® 1351 MOUSE

- Mouse & Joystick Operation
- GEOS Compatible

$39.95

Commodore® 3½" DISK DRIVE

$189

Commodore® 1670 MODEM

1200 BAUD DIRECT CONNECT

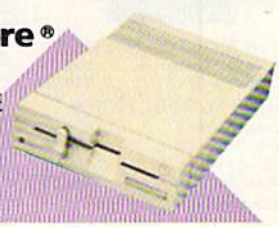
$69

Commodore® 1764 256K RAM EXPANSION

$119

Commodore® 1541II 5¼" DISK DRIVE

$175



SEE FOLLOWING PAGES FOR ORDERING INFORMATION

TUSSEY COMPUTER PRODUCTS TOLL FREE **1-800-468-9044** tcp

GAME GALLERY

Educational Software too!

ALL GAMES STOCKED FOR QUICK SHIP!

ACCESS
Echelon $25.95
Leader Board $22.95

ACCOLADE
Apollo 18 ..... $17.95
Comics $19.95
4th & Inches $18.95
Hard Ball $9.95
Miniputt $18.95
Test Drive $18.95

ACTIONSOFT
Thunder Chopper $18.95
Up Periscope $17.95

ACTIVISION

Air Rally $19.95
Aliens $9.95
Gamemaker Package with all Libraries $39.95
Last Ninja $19.95
Maniac Mansion $21.95
Music Studio $19.95
Shanghai $18.95

AVALON HILL
NBA $24.95

BRODERBUND
Cauldron $9.95
Karateka $9.95
Lode Runner $9.95
Superbike Challenge $12.95
Toy Shop $19.95
Ultima V ..... NEW! $34.95

CINEMAWARE
Defender of the Crown $21.95
SDI $21.95
The Three Stooges $21.95

COSMI
Def Con 5 ..... $17.95

DATA EAST
Commando $13.95
Karate Champ $9.95
Kid Niki $18.95
Platoon $18.95
Speed Buggy $18.95

Datasoft

Hunt For Red October .. $25.95
Alt Reality/Dungeon $25.95
Video Title Shop $19.95

DIGITAL SOLUTIONS
Pocket Writer 2 ..... $32.95
Pocket Filer 2 ..... $19.95
Pocket Planner 2 ..... $34.95
Digital Superpak 2 ..... $57.95
Pocket Writer Dictionary .. $11.95

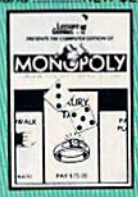
ELECTRONIC ARTS

Jordan vs Bird.NEW $19.95
Bard's Tale $24.95
Bard's Tale II $24.95
Bard's Tale III ..... NEW $24.95
Chessmaster 2000 ..... $24.95
Demon Stalkers $19.95
Deathlord ..... NEW $19.95
Double Dragon ..... NEW $24.95

Caveman Ughlympics..$19.95

Dragon's Lair $19.95
Marble Madness $19.95
Mars Saga ..... NEW $24.95
Master Ninja $19.95
Moebius $27.95
Modem Wars ..... NEW $24.95
Pinball Construction $9.95

Scruples ..... NEW $24.95
Skate or Die $19.95
Sky Fox II $19.95
Strike Fleet $19.95
World Tour Golf $19.95
Yeager AFT $22.95
Wasteland ..... NEW $24.95



Monopoly $19.95

EPYX

Impossible Mission 2 .... $23.95
NEW! 200 XJ Joystick $11.95
500 XJ Joystick $14.95
California Games $22.95
Champ'ship Wrestling $13.95
Create a Calendar $18.95
Destroyer $23.95
4x4 Off-Road Racing $23.95
L. A. Crackdown ..... NEW $23.95
Movie Monster $12.95
Street Sports Baseball $23.95
Street Sports Basketball .. $23.95

Street Sports Football .. $23.95
Street Sports Soccer NEW $23.95
Sub Battle $23.95
Summer Games $13.95
Summer Games II $13.95
Winter Games $13.95
World Games $13.95

FIREBIRD
Elite $11.95
Guild of Thieves $22.95
Knight ORC $24.95
Star Glider $22.95
The Sentry $24.95

GAMESTAR
Championship Football $21.95
GBA Basketball 2 on 2 ..... $11.95
Top Fuel Eliminator $17.95

INFOCOM
Beyond Zork $26.95
Hitchhiker's Guide $14.95

LANCE HAFNER
for the best in sports strategy simulation
3 in 1 Football $29.95
Bktball, the Pro Game .$29.95
Courtside College Basketball $29.95

MICROLEAGUE
Baseball $24.95
Wrestling $18.95

MICROPROSE
SIMULATION + SOFTWARE

Airborne Rangers $21.95
F-15 Strike Eagle $21.95
Gunship $21.95
NATO Commander $22.95
Pirates $23.95
Red Storm Rising ..... NEW $23.95
Silent Service $21.95
Stealth Fighter $24.95

MINDSCAPE
Gauntlet $22.95
Harrier Combat Simulator $18.95
Indoor Sports $18.95
Paperboy $21.95
Superstar Hockey $22.95

SIMON & SHUSTER
Star Trek: Promethian Adv $19.95
Typing Tutor IV $24.95

SPECTRUM HOLOBYTE
Falcon ..... NEW $22.95
PT 109 ..... $24.95
Soko Ban $17.95

SSI

Pool of Radiance .NEW $24.95
Battles of Napoleon ..NEW $32.95
B-24 ..... $21.95
Eternal Dagger $24.95
Heroes of the Lance .NEW $24.95
Phantasie I, III (each) $24.95
Questron II $24.95
Rings of Zilfin $23.95
Roadwar Europa $24.95
Shard of Spring $23.95
Wargame Const Set $18.95

SUBLOGIC
& (SOFTWARE SIMULATIONS)
Jet $25.95
Flight Simulator II $31.95
Pure Stat Baseball $22.95
Pure Stat College BB $22.95
Stealth Mission $31.95

COMMODORE 128 SOFTWARE

WORD PROCESSORS
Fleet System 4 ..... $47.95
Font Master 128 ..... $33.95
Paperclip III $32.95
Superscript 128 ..... $44.95
Term Paper Writer $29.95
Wrdwriter 128 w/spell .$31.95

SPREADSHEETS
Swiftcalc 128 w/sdwys $32.95

DATA BASES
Data Manager 128 ..... $31.95
Perfect Filer $19.95
Superbase 128 ..... $39.95

MISC. 128 SOFTWARE
Mach 128 ..... $31.95
Partner 128 ..... $36.95
Sylvia Porter's Personal Finance Planner $29.95

CMS
ACCOUNTING SYSTEMS
Pkg. Price for all Modules:
C128 version $124.95
C64 version $119.95

64C BUSINESS AND PRODUCTIVITY

Vizastar 64 4K
Integrated Productivity Package For The 64
NOW ONLY $9.95

64C DATABASES
Bank Street Filer $19.95
Data Manager II $13.95

64C SPREADSHEETS
Swiftcalc 64 w/sideways .. $13.95
Sideways $12.95

64C WORD PROCESSORS
Bank Street Writer $29.95
Font Master II $26.95
Paperclip w/spellpack $29.95
Paperclip III $31.95
Word Writer III $25.95

FINANCIAL & ACCT.
Timewks Electr. Checkbk . $14.95
Timeworks Money Mgr $14.95

MISCELLANEOUS
Estes pwr supply for C-64 $54.95
Thinking Cap $24.95
Copy II 64/128 ..... $19.95
Fast Load $23.95
Bobs Term Pro $32.95

GRAPHICS CORNER

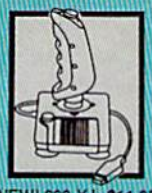
Batteries Included
Paperclip Publisher $32.95
Berkeley Softworks
GEO Publish $39.95
Broderbund
Graphics Lib'ry I,II or III . $15.95
Print Shop $25.95
Springboard
Certificate Maker $13.95
Clip Art I or III $9.95
Newsroom $13.95
Unison World
Printmaster Plus $21.95

DISK-KOUNTS

per box of 10		3.5"	5.25"
BONUS	DS DD		$6.95
MAXELL	DS DD	$17.95	$9.95
VERBATIM	DS DD	$19.95	$9.95
SONY	DS DD	$19.95	$10.95

tcp TUSSEY COMPUTER PRODUCTS P.O. BOX 1006 STATE COLLEGE, PA 16804 **1-800-468-9044**

CHOOSE YOUR WEAPON!



NEW! 200 XJ	$11.95
500 XJ	$14.95
The Boss	$12.95
Bat Handle	$17.95
3-Way	$22.95

FREE GAMES! with any purchase

From Commodore/Infocom & TCP

As a "thank you" to our many valued customers we are giving away one of these Infocom Adventure Games (your choice), with every order. This offer is good on any of the items in this ad, when ordered before December 31, 1988. If you've never ordered from TCP before, this is a great opportunity to get acquainted!

FEDERAL EXPRESS

Software orders over $100 and Accessories under 6 pounds will be shipped Federal Express

(Even at these prices) You only pay TCP's standard shipping charge of $4.00 per order. Orders arriving before 3:00 PM our time will be shipped out same day. If part of your order is backordered the remainder will be shipped UPS Ground FREE!

SECURITY

- Your Credit Card is not charged until your order is shipped.
- We insure your order at no extra cost to you.
- Tussey is a financially strong and well established company.

CUSTOMER SUPPORT

- After sales support.
- Knowledgeable staff, all graduates of Tussey's "Computer Boot Camp".
- Our advanced warehouse/materials handling system assures your order is shipped out accurately & on time.
- Our IBM 5360 allows instant order and inventory status.

COMMODORE AMIGA

AMIGA SOFTWARE

PRODUCTIVITY

Deluxe Music Const Set	$59.95
Deluxe Paint II	$79.95
Deluxe Print II	$49.95
Deluxe Video 1.2	$79.95
Draw Plus	$159.95
Logistix	$114.95
Superbase	$89.00
Vizawrite	$89.00
Word Perfect	$179.00
Word Perfect Library	$69.00

ENTERTAINMENT

Balance of Power	$29.95
Bard's Tale II	$37.95
Beyond Zork	$29.95
Black Lamp	$18.95
Chessmaster 2000	$27.95
Defender of the Crown	$29.95
Deja Vu	$29.95
F/A 18 Interceptors	$32.95
Flight Simulator II	$32.95
Leisure Suit Larry	$29.95
Photon Paint	$59.95
Silent Service	$24.95
Sub Battle Simulator	$32.95
Superstar Ice Hockey	$32.95
Test Drive	$24.95
The Three Stooges	$31.95
Tracers	$24.95
Univited	$29.95

For All Your AMIGA Needs Call tcp

512K RAM Upgrade $159

1010 EXT DRIVE ...$219

1680 MODEM $139

Call For Other AMIGA Products

To order by mail: We accept money order, certified check, personal check. Allow 2 weeks for personal & company checks to clear. **Shipping:** $4.00 for software. FOR ALL HARDWARE AND ANY ACCESSORY OVER 6lbs Call our Toll Free Number 1-800-468-9044 for shipping charges. Add $3.00 per box shipped COD. Additional shipping required on APO, FPO, AK, HI, and foreign orders. **Terms: PRICES REFLECT CASH DISCOUNT, ADD 1.9% FOR MASTERCARD OR VISA.**
ALL SALES ARE FINAL
Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.

VISA MasterCard

Berkeley Softworks

GEOS 128	$39.95	GEOS	$34.95
Geo Calc 128	$39.95	Geo Calc	$29.95
Geo File 128	$39.95	Geo File	$29.95
Geo Programmer	$39.95	Geodex	$24.95
Geo Publish	$29.95	Deskpack	$18.95
Geo Write 128	$39.95	Fontpack	$18.95
Geo Spell	$18.95	Geo Write	$29.95

PRINTERS

NEW LOWER PRICES !!

SUPER GRAPHIX JR
Printer Interface $32.95
w/Printer from Tussey $29.95

SUPER GRAPHIX
Interface w/8K buffer
down loadable fonts $54.95
w/Printer from Tussey $49.95

SUPER GRAPHIX GOLD .$94.95
w/Printer from Tussey $84.95

Xetec

OKIDATA 180

$229

- Built in COMMODORE® and EPSON® Interface
- 180 CPS Print Speed

Call For Other Okidata Printers

Panasonic Office Automation

2 yr warranty

1080iII $159
1091iII $189
1092i $319
1124 (24 pin) $CALL

NX-1000
(144 draft/36 NLQ) $159

NX 1000 Rainbow
(color printer) $229

NX-1000C
(Commodore Int'face) $174

NX-1000C Rainbow
(Commodore Interface/ Color Printer) $229

star micronics inc

NX-2400
(24 Pin Printer) $349

Save on Printers

CITIZEN

120D $139
180D $159
MSP-40 .....$289
Tribute 224 .....$589

SEIKOSHA

2 yr warranty

SP-180 VC $139
SP-1200 VC....$CALL
SP-1200 AI $169

Regular Hours: 8:00AM - 11:00PM Mon-Fri, 10:00AM - 8:00PM Sat, 12:00PM-8:00PM Sun EST

CALL TOLL FREE 1-800-468-9044

For Information Call 814-234-2236
FAX 814-237-4450

tcp

Red Storm Rising

How realistic can a simulation be? That's a question software publishers have been asking for years, with MicroProse pursuing it perhaps more intensely than anyone else. The company's latest release comes close to providing an answer. With *Red Storm Rising*, it's produced not only a superb simulation against which similar products will be measured for some time to come, but also interactive entertainment that's very close to being a novel.

Modern submarine warfare is high-tech chess played for the very largest of stakes. Long gone are the days when the sub's skipper—a John Wayne or Cary Grant type—reversed his cap, pasted his eye to the 'scope, and barked firing orders.

Now, a submarine is a set of systems—defensive and offensive, all of them interrelated, many of them interdependent. Duels between submarines, or between subs and surface vessels, can take hours or days as each attempts to locate the other and gain the tactical advantage. Concentration is key—blips and instrument readings can locate and identify the enemy. Tracking and killing can take hours or days.

Red Storm Rising captures those tensions, fashioning them into the centerpiece of an interactive novel. Based on the best seller by Tom Clancy, the game uses the book's wide sweep as backdrop; focus is trained upon your submarine and its mission. Your mission, though, may determine the outcome of World War III.

It will take a while to learn enough to save the world. Aware of the complexity of the simulation, MicroProse has built in several training missions, as well as four difficulty levels ranging from Introductory to Ultimate. While the temptation is, doubtless, to begin with the full-campaign game, the results will quickly send you to one of the training missions, where your sub is invulnerable. There are two training missions—one pitting you against a Soviet sub, the other against an antisubmarine destroyer.

Training and battle simulations provide a good opportunity to sample *Red Storm*'s richness. You're offered a choice of playing in 1984, '88, '92, or '96, with technological advances altering the nature of play in each time period. Weapons, already "smart," become even smarter with passing years. The Soviet Northern Fleet—Red Banner—grows in size and capability.

During training you can also discover just how systems-oriented submarine warfare has become. Sonar is the heart of submarine sensors, and *Red Storm* reveals many of the varieties of sonar available today. Modern systems can identify the sound signature of other vessels—a far cry from the simple "pings" of submarine war movies—and provide vital information as battle looms. Additionally, there is radar and, of course, a periscope. (This is the modern world, though; the 'scope is laser-equipped.) While you listen for the noise of other craft, be sure you do everything you can to muffle your own sounds; the bad guys are listening, too.

Red Storm Rising *is a master achievement, perhaps the finest entertainment software of 1988.*

Once combat begins, you have the best modern weapons at your disposal. Depending upon how you've configured your boat, you can select from several types of torpedoes and missiles. Today's weapons are programmable, and some torpedoes run on wires which allow them to be steered. When you're facing an enemy sub, these abilities can spell the difference between success and disaster. For those who miss the old "fire and watch" days, MicroProse includes a feature called Action Track, which provides a beautifully animated view of your missiles homing in on enemy surface ships and aircraft.

With training runs mastered, the next step is a full battle simulation. These include one-on-one duels with other subs, with carrier task forces, or with groups of surface ships. Each engagement has its own characteristics,

demands its own strategy, and requires the right weapons.

Unfortunately, your opponents are quite intelligent as well. *Red Storm*'s manual makes the point that today's sub captains and crews are highly educated and superbly trained. The same goes for their counterparts on the other side. It's frightening—but salutary in the larger sense—to watch an enemy outmaneuver, outstrategize, and outthink you. This is especially true at the Ultimate level, where the enemy captains are simply uncanny. More than any solitaire simulation I know, *Red Storm* delivers the sensation of playing against another person.

The ocean itself is a character in the game. Its characteristics must be closely monitored: There are offensive and defensive advantages to be gained from various sea conditions and depths. Thermoclines, shadow zones, ducts, and convergence are only a few of the fascinating aquatic characteristics that affect your sonar readings. The ocean is your element, and you will be repaid for learning its nature.

You can and should train, but no matter how prepared you consider yourself, the full *Red Storm* scenario is likely to take you by surprise. For one thing, Soviet tactics differ from game to game; it is unlikely that you will encounter the same situations twice. For another, surprise was a key element in the novel, and it figures here as well.

The campaign game begins with a concise summary of Clancy's opening sequence. Soviet fuel supplies are destroyed by revolutionaries. In hopes of staving off economic collapse, the Soviets plan to seize Middle Eastern oil fields. First, though, NATO must be neutralized. Through subterfuge, the

Soviets heighten tensions until hostilities break out, all the while making it appear that the West is at fault. This narrative information is delivered via self-contained, noninteractive scenes that dramatize Clancy's story.

While the training missions and battle simulations begin at sea, the campaign scenario requires that you navigate your sub from your home port of Holy Loch, Scotland, to your destination in northern waters. The Norwegian Sea is the crucial passage through which Soviet forces—both submarines and surface vessels—must pass in hopes of interdicting Allied convoys. It will be your battleground, the testing place for your skills.

Using accelerated time and satellite and reconnaissance information, you drive northward, constantly monitoring the latest data, but constantly aware that the data is already old. Judgment, analysis, and guesswork must come together as you take up your position. And positioning, in modern submarine combat, can be everything. Once you're in position, game time slows until it's only slightly accelerated; I've been engaged in cat-and-mouse duels that lasted the better part of an hour. (They'd have lasted longer were I a better submarine captain.)

As the campaign proceeds, you receive periodic updates on the progress of the war. A map reveals the degree to which Soviet efforts to penetrate NATO territory have been successful or the degree to which the Allies have held back the invaders—with the crucial assistance loaned by you and your sub. Total failure earns a grimly animated sequence showing the hammer and sickle being raised over Washington; success results in a change of leadership in Moscow. You can win medals and commendations if your performance warrants them.

A game this sophisticated can't be learned in an evening. In fact, you might wish to spend an evening or two reading *Red Storm*'s manual. MicroProse has long been known for the excellence of its documentation; this time, the company has surpassed itself. Thorough and literate, the manual is a clearly written and illustrated guide to modern submarine strategy and tactics, as well as a compendium of contemporary and projected ships, sensors, and weapons systems. There's also a fair amount of political observation and commentary scattered through the pages; nothing obtrusive—just a definite point of view. It's refreshing to encounter that sort of perspective, whether or not you agree with it. For all of its thoroughness, the manual could use a bibliography; a game such as this demands a commitment that additional reading could reinforce and enhance.

I returned to Tom Clancy's *Red Storm Rising* more than once as I played the game. (His *Hunt for Red October* is another good source for submarine tactics worth trying.) As I read, I was struck by how faithfully MicroProse captured the feel of Clancy's vision of World War II while also duplicating the sorts of situations his submarine warriors faced.

Red Storm Rising is, to my mind, the finest entertainment software of 1988, a high-water mark (as it were) in interactive development that will not be surpassed for some time to come.

—*Keith Ferrell*

MicroProse
120 Lakefront Dr.
Hunt Valley, MD 21030
$44.95

SCENE
TAKE
3
Take 3
FIRST ROW
You finally got your Pal!
The Honeymooners
PRESENTS
The ultimate space odyssey!
STAR EMPIRE
THE TWILIGHT ZONE
3 entertainment triumphs from FIRST ROW!
STAR EMPIRE
A space odyssey—from the people who brought you ELITE™
The HONEYMOONERS
Join the hilarious antics of Ralph and Ed
The TWILIGHT ZONE
Out of the 6th dimension comes the long-awaited graphic thriller
3 computer games destined to rise to the "Top of the Charts"!
CHECK YOUR LOCAL RETAILER OR CALL DIRECT 215-337-1500
T.M.
FIRST ROW
Software Publishing
FIRST ROW SOFTWARE PUBLISHING, INC.
900 East 8th Avenue
King of Prussia, PA 19406
(215) 337-1500
The Twilight Zone ©1988 CBS, Inc.
The Honeymooners ©1988 VIP Corp.

Sky Travel

I don't usually gush over software, but *Sky Travel* has caught my attention. It's a wonderful program, and I'm not even an astronomy buff.

With *Sky Travel* on your 64, you can view the heavens as seen from anywhere in the world on any date between 9999 B.C. and 9999 A.D. It's such a user-friendly program, you can operate it without the manual. Once you do open the 61-page manual, you'll find an excellent beginner's tour of *Sky Travel* and an introduction to astronomy as well.

Sky Travel has four basic modes of operation: Sky, Map, Set, and Chart. In Sky mode, you'll find yourself looking at the sky with a 72-degree field of view. This is just about what you'd see outside, looking at the night sky.

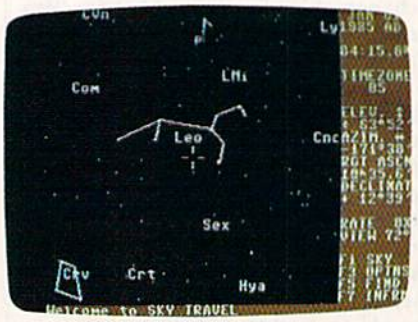
First set your latitude, longitude, and the time of evening. Then look to the north and see the North Star, Big Dipper, Little Dipper, and other stars and planets—assuming you live in the Northern Hemisphere. Now walk outside, and if it's a clear night, you'll see the same stars in the night sky!

It was cloudy the first few nights I looked, but on the fourth evening I could see a single star through the haze, straight overhead. Returning to my computer, I moved the crosshairs in an upward direction until *Sky Travel* reported I was "Looking Straight Overhead."

Sure enough, there was one extremely bright star in the center of the screen. I aligned the crosshairs and pressed the f7 (Inform) key. The disk drive whirred, and this message scrolled across the bottom of the screen: *Vega "falling bird," (alpha) Lyrae HD#172167 0 magnitude, spectral class A0 (var); double star, separation (seconds) = 63; 25 light years distance. Surrounded by infra-red emitting disk of dust and solid material. It may have a planetary system in the process of formation. Vega is the second brightest star in the sky and is approaching Earth at 20 miles per second.*

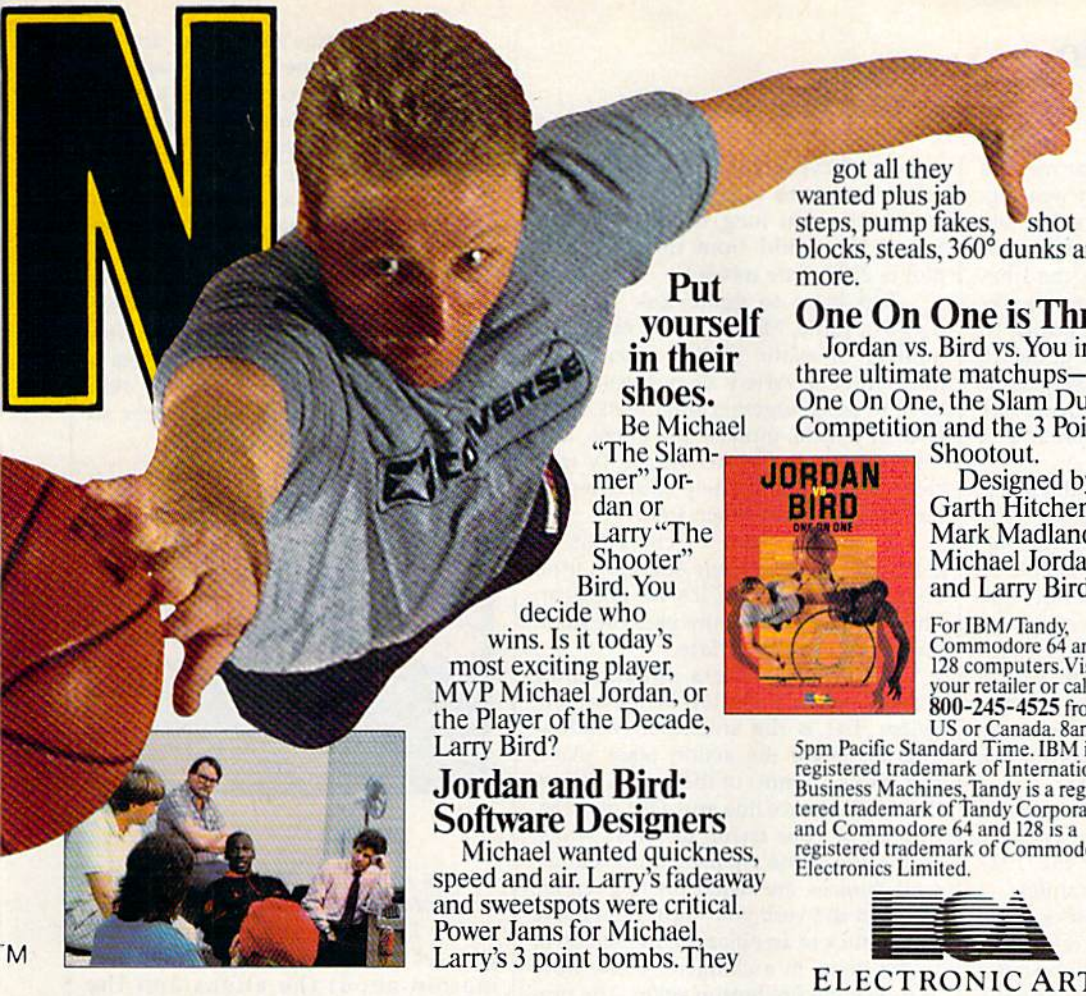
Sky mode displays additional information on the right of the screen. You'll find the date, time, and time zone, plus elevation, azimuth, right ascension, and declination. The manual describes all these terms in language that's easy to understand.

Several options can be toggled on or off in Sky mode. *Lines* toggles a set of lines connecting the constellation's stars, *names* toggles the constellations's abbreviated names, and *symbols* toggles the planetary symbols. With *deep-sky* switched on, the screen displays more distant objects in the universe, such as nebulae and galaxies.



After identifying Vega with the Sky mode, I turned on Track mode. This tracks the sun, moon, or any of the planets, keeping them in the center of the screen. I set the time for about 4:00 a.m. and found the moon below the horizon. *Sky Travel* allows you to stop the clock, run the clock in realtime, or move the clock forward or backward at up to 64 times normal speed.

The 64X setting condenses an hour



Put yourself in their shoes.

Be Michael "The Slammer" Jordan or Larry "The Shooter" Bird. You decide who wins. Is it today's most exciting player, MVP Michael Jordan, or the Player of the Decade, Larry Bird?

Jordan and Bird: Software Designers

Michael wanted quickness, speed and air. Larry's fadeaway and sweetspots were critical. Power Jams for Michael, Larry's 3 point bombs. They got all they wanted plus jab steps, pump fakes, shot blocks, steals, 360° dunks and more.

One On One is Three.

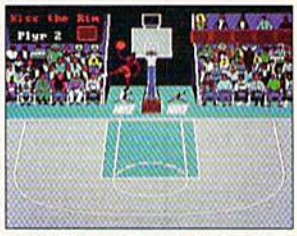
Jordan vs. Bird vs. You in three ultimate matchups—One On One, the Slam Dunk Competition and the 3 Point Shootout.

Designed by Garth Hitchens, Mark Madland, Michael Jordan and Larry Bird.

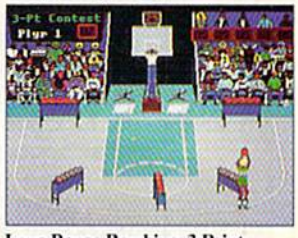
For IBM/Tandy, Commodore 64 and 128 computers. Visit your retailer or call **800-245-4525** from US or Canada. 8am to 5pm Pacific Standard Time. IBM is a registered trademark of International Business Machines. Tandy is a registered trademark of Tandy Corporation, and Commodore 64 and 128 is a registered trademark of Commodore Electronics Limited.

ELECTRONIC ARTS®

The Classic Confrontation: One On One. The crowd goes crazy as Michael and Larry unload all their patented moves.



Aerial Warfare: The Air Jordan Slam Dunk Contest. Up to 4 players challenge each other or Michael himself in a battle of Power Jams. Designed by Jordan.



Long Range Bombing: 3 Point Shootout. 25 shots in 60 seconds from 23' out. Don't blow the money ball. Larry's signature event.

to just one minute. Watching the moon rise, I was startled to see the background switch from black to light gray at 4:20 a.m., then purple at 4:43 a.m., blue at 5:05 a.m., and light blue at 5:32 a.m. This realistic touch came as a pleasant surprise, as I had hardly touched the manual at this point.

Using Set mode, you can adjust the month and year, making it possible to observe past or future events. The manual includes many examples, including solar and lunar eclipses and transits by Mercury and Venus.

You can view the heavens from anywhere on any date between 9999 b.c. and 9999 a.d.

You can also observe planetary occultations. The manual gives a detailed example of the occultation of Mars by the moon that was observed by Aristotle on May 4, 357 B.C.

Set mode also allows moving forward and backward in time over thousands of years. The Earth precesses, or wobbles slowly on its axis, over a period of about 23,000 years. Because of this precession, Polaris, the star we see at the end of the Little Dipper's handle, will not be the North Star in a few thousand years. *Sky Travel* calculates this precession and allows accurate viewing of the skies throughout many thousands of years. Take a look at Polaris's location in 7530 A.D.

Map mode shows a Mercator map of the Earth. By positioning the crosshairs, you can set *Sky Travel* to your approximate location, or you can use the Latitude and Longitude display on the right side of the screen for a more exact setting. To see the Southern Cross, set your location to anywhere in the Southern Hemisphere. You can even view the night sky as seen by a friend living in a distant location.

Chart mode sends a portion of the sky to your printer. I set the date ahead to the middle of my beach vacation and printed one chart looking straight overhead and another looking north, setting the time for midnight. *Sky Travel* printed the star maps sideways, using a full 8½ × 11 inch sheet. The printout included all the information shown on the right side of the screen. In addition to the stars and planets, *Sky Travel* also printed the date, time, elevation, and other relevant data. Chart mode uses the popular 1525/801 printer format—with my interface set accordingly, it printed successfully on my first attempt.

The manual suggests a Boy Scout merit badge counselor might be interested in one of the program's examples. I think the manual is too modest. After showing *Sky Travel* to my boss, an ex-pilot, he commented that the program would be a good training tool for celestial navigation. As the program's subtitle states, *Sky Travel* is an all-encompassing astronomy program. Whether you're just curious about the heavens or you'd like to navigate by the stars, you'll find *Sky Travel* a rewarding experience.

—Russ Fisher

MicroIllusions
17408 Chatsworth St.
Grenada Hills, CA 91344
$49.95

Zak McKracken and the Alien Mindbenders

I know people are laughing at me. It's these stupid nose glasses I'm wearing. You know, those fake glasses with a big nose, bushy eyebrows, and a mustache. On top of that, my mother's mad because I haven't called, but I'm not taking any chances—I'm not going to touch a telephone, and I'm going to keep wearing these stupid nose glasses until I solve the riddle behind *Zak McKracken and the Alien Mindbenders*. A fellow can't be too careful.

But I'm getting ahead of the story. Let me start at the beginning.

As a hotshot reporter for *The National Inquisitor*, the sleaziest tabloid to grace a supermarket checkout line, Zak McKracken is assigned to investigate a rampaging two-headed squirrel that's terrifying campers near Seattle. Zak is tired of dreaming up yarns about vegetarian vampires and carnivorous cantaloupes, but he agrees to do this one last story before he writes his novel.

Since Zak's going to be in the area anyway, his boss wants him to check out the 50th anniversary of the 1947 UFO sightings near Mount Rainier.

Zak reluctantly agrees, picks up an airline ticket to Seattle, and returns to his apartment. Later that night he has a strange dream about a giant face on the surface of Mars, a map of the Earth, a sinister-looking alien, an attractive brunette, and a pair of ominous nose glasses.

Zak's dream is also a convenient place to run the credits for this zany adventure by Lucasfilm Games. That's the same group who dreamed up *Maniac Mansion*. Make sure you keep one eye on the dream while reading the credits or you'll miss several important clues to the game.

Speaking of clues, check out the complimentary copy of *The National Inquisitor* that's included with the software. It's packed with great stories such as the one about the fellow who used a dime to free himself from his wrecked Toyota. Good taste prevents me from revealing what part a wet rat played in his survival, but there are plenty of other tantalizing tidbits. Read about a mechanic who turned a VW bus into a space shuttle. Dissolving parachutes, singing dolphins, Egyptian practical jokers, and a wondrous zip-open tummy diet are just a few of the journalistic jewels found in Zak's tabloid.

The top story, however, is the stupidity epidemic that's plaguing the world. It's been linked to a group of aliens who are running the telephone company, according to the *Inquisitor*. These noseless fiends have connected a stupidity machine to the phone system, and its 60-cycle hum is turning everyone's brains to mashed potatoes. It won't take you long to discover that saving the world from this nefarious plot is Zak's true mission.

You have to guide Zak and his friends, Annie, Melissa, and Leslie, to a number of exotic locales where they must solve a variety of puzzles. They have to piece together fragments of an ancient puzzle, unmask the aliens, and turn off the insidious stupidity machine. Zak needs the help of his friends, but he has to find them first.

If using a team of characters to solve the game's puzzle sounds a little like *Maniac Mansion*, it's no accident. This animated adventure uses the same format and user interface.

When characters speak, their words appear at the top of the screen. Below that is the animation window. This is where the action takes place, and it fills up most of the screen. Below that is a sentence line and a list of verbs. Instead of your trying to guess which words the game's parser understands, your choices are listed on the screen. Click on the verb you want; then move the joystick to an object on the screen or to the items in a character's inventory and click the fire button again. The program automatically builds a sentence. Click once more and the character carries out the directions.

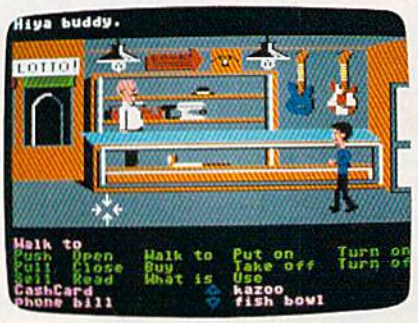
I'm going to keep wearing these nose glasses until I solve this puzzle.

These directions often require the program to access the disk. Since the game's designers know the 1541's less-than-speedy reputation, a snail icon appears on the screen until the game continues. This type of humor pervades the story. Another example is on the plane to Seattle, where you'll probably have Zak visit the rest room—if you can get past the cranky stewardess. Click on the verb *Use* and then click on *Toilet*. The resulting action won't offend anyone—even your grandmother—but it is funny. The game is packed with humor.

Zak and his friends have to solve dozens of puzzles, and there are a number of possible solutions. Just use your imagination and try several objects in your inventory. Be sure to read the tabloid for clues. There are even a couple of clues in the game's instructions.

Since the game's two disks are not copy-protected, the manual suggests you make backup copies and put the originals in a safe place. It also explains how to install the game on a hard disk. If your character leaves the country, you'll have to enter an exit visa code for the game to continue, so don't lose the code sheets.

Naturally, you won't complete the game in one sitting, but you can save your progress on a separate disk. After you've seen the opening sequences a couple of times, you can easily skip them when restarting a saved game so you can get right to the story.



As in *Maniac Mansion*, the action occasionally is interrupted with a *cut scene*. These are short animated sequences that provide clues and information about the aliens and the mischief they have in mind.

The animation is amusing, the plot is entertaining and funny, and the puzzles are mindbending without being discouraging. In short, Zak's a winner.

Wait a minute! Did I say *mindbending*? OK, that does it. I don't care what other people say. I'm going to keep wearing these nose glasses until I solve this puzzle. But it's so much fun, I hope it takes weeks and weeks. Sorry, mother.

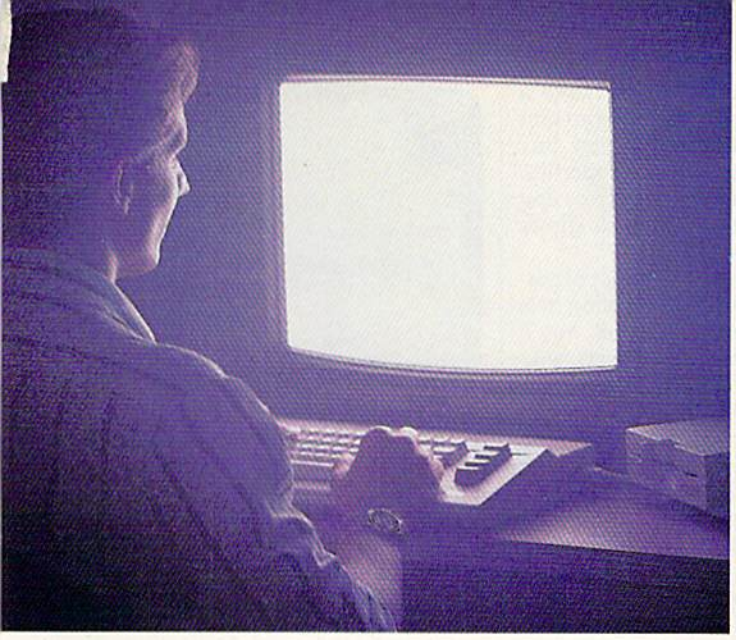
—*Tom Netsel*

Lucasfilm Games
Distributed by Mediagenic
3885 Bohannon Dr.
Menlo Park, CA 94025
$34.95 ▷

Save 55% On Gazette Disk!

A full-year subscription includes over 100 ready-to-run programs. Now only $69.95—a 55% savings off single-issue price.

To order, call toll-free
1-800-727-6937



There's so much to do on Q-Link, it can't all fit into this ad. For that, you'll need our full-color program guide, with a complete calendar of events and activities. And you'll get that free from Q-Link every month.

A special offer.

If you don't have a modem, Q-Link will help you get one at a price lower than anyone could imagine. For details, take a look at the attached card, or call 1-800-782-2278, Ext. 1584.

You'll also get a free Q-Link Starter Kit, including software. It's easy to get going and there's plenty of online support every step of the way. Like Q-Link support groups and helpful Q-Guide experts.

Until now, you and your Commodore® could only talk to each other.

Welcome to Q-Link.

You and your Commodore® probably have a very good relationship. But even the best relationships need to grow. That's why there's Q-Link.

Q-Link connects you with tens of thousands of friendly, interesting people all over the country. Share stories, talk shop, tell jokes, or just shoot the breeze with them in a whole new way. On your Commodore.

When you and your Commodore start talking to the rest of the world with Q-Link, exciting things start to happen. Things that are sure to improve your relationship. Like playing the latest interactive, full-color games. Taking college courses. Accessing over 15,000 software programs. Enjoying guest speakers on a wide range of topics.

And Q-Link gives you a direct connection to the experts at Commodore headquarters as well as the major software publishers – a Q-Link exclusive.

Getting into Q-Link.

You'll love being a member of Q-Link. You pay only $9.95 a month (and any local phone charges) for "Basic" service, which includes unlimited access to the latest news, sports, and entertainment information. Even a full-featured encyclopedia. We also offer "Plus" services such as shopping and travel reservations for only 8¢ per minute extra.

It's time you and your Commodore got out and talked to more interesting people than just each other. And on Q-Link, it couldn't be easier.

To join Q-Link now, call:

1-800-782-2278

Ext. 1584

Q-link

Add new life to your Commodore.®

Monopoly

I didn't even want to open the box. How could *Monopoly*, the computer game, have the same appeal as the famous board game?

For me, the real fun of the board game is being able to gleefully count, and then gloat over, my stack of money; coaxing my sister into showing mercy; triumphantly moving my marker with bounces that shake houses off the streets; vainly trying to keep my mother from being ruthless; hearing groans as I buy still more houses and hotels; plotting with my brother-in-law to bankrupt the women of the family, only for us to fight it out between ourselves; and, finally, ending a game at 2 a.m., exhausted, bleary-eyed, and happy.

I didn't want to open the box, because I was certain that no computer game could ever recreate the joy of the real thing. But this one comes awfully close.

Licensed from Parker Brothers, the computer edition of Monopoly is extremely faithful to the board game. Gameplay is the same—with one exception. Perhaps it was only our house rule, but when the pot filled with money from fines, taxes, and such, the first person to land on Free Parking got it all. That's just not possible here.

The playing screen shows the entire board from a tilted perspective. Because the names of the properties are too small to read, the deed cards appear four at a time in a lower portion of the screen, showing the properties next to your token. The screen also displays each player's cash holdings. This prevents you from sticking money in your pockets in an effort to look poor. It also prevents you from gleefully counting your stack of bills, though you can still gloat.

To roll the dice, shown in the screen's lower left corner, press the joystick fire button or designated key. Following the roll of the dice, your token automatically moves the appropriate number of spaces. The active player's name is displayed in the screen's upper left corner. An action bar runs across the top of the screen.

Monopoly can be played by one to eight players, with each player choosing a token for his or her name. One player can play by competing against the computer, an opponent even more ruthless than my mother. Before starting, you elect to play either a regular or a short game. In the short game, you set a time limit in hours and minutes. When the time is up, the game ends—the one with the most money and property wins.

The dice are rolled to determine who will be first to play. When your name appears as the active player, use the joystick or keyboard to make a choice from the action bar. You can quit or save a game, mortgage property, buy houses, see owners, trade properties, collect rent, or auction property. You can also select Fastmove, which allows less time for moves.

Since property cards are not physically laid out, the Owner option lets you see the properties' owners. You'll need to collect rent from players who landed on your properties prior to your turn. Selecting Cash toggles on or off each player's net worth in cash and property. Mortgage shows the cards of your own properties, and you can select the properties you want to borrow against by moving the cursor and pressing RETURN.

As the game progresses, you try to own blocks of similar properties, while leaving yourself enough capital to buy houses and hotels. You'll still cringe, just as you did with the board game, when forced to choose a card from Chance or Community Chest—especially if the card says *Go to Jail. . . .*

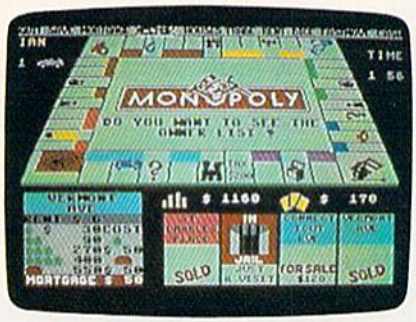
In a regular game, play ends when all players but one have gone bankrupt or admit defeat. You can delay either outcome by saving the game to a separate disk. This option makes it possible to end at a reasonable hour, rather than at 3 a.m. I must admit, I don't miss the late hours.

> *I didn't want to open the box—I was certain that no computer game could ever recreate the joy of the real thing.*

Another thing I don't miss is being forced to be the banker—and the bickering and nagging that usually goes along with the position. The computer handles all the chores of banking, dealing properties, and collecting fines and taxes, leaving you free to concentrate on the game.

In the end, I found that *Monopoly* is the same game I played years ago, with several new conveniences built in. Even the packaging looks like the traditional box seen in stores for half a century. The rules seem somehow easier to understand, perhaps because I now have more understanding. It was always a good game and a good excuse for getting together with family and friends. It still is.

But you can never really go back to those times. Now I play the game with a new generation of would-be tycoons—my own children. When fortunes suddenly change, Mike frets and fumes, Kelly chortles and wails, Mike triumphantly buys a hotel for Baltic Avenue, and Kelly gives him a raspberry as she takes Boardwalk and Park Place. And I sit there, realizing that some things never really change.



Perhaps 25 years from now, my kids will sit down to write a review of the new holographic Monopoly and will begin by reminiscing about the games they played as children. It'll simply prove once again the enduring quality of this classic game.

—*Ervin Bobo*

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
$29.95

L.A. Crackdown

When I was a lad, my friends and I used to play a game called *Cops and Robbers.* I have fond memories of those adventurous days, righting wrongs and conquering evil throughout the neighborhood. Unfortunately, when I reached my midthirties, I had to discontinue this practice because my children started to disclaim me. My friends became involved in mundane things, such as dentistry and architecture, and seemed to lose interest in our game. No matter. Thanks to Epyx, my computer and I can still chase the bad guys with an action-packed cops-and-crooks game called *L.A. Crackdown.*

Epyx breaks new ground with this police adventure, the third in the company's Masters Collection Series. *L.A. Crackdown* is a welcome departure from the sports-skate-surf software cycle the company has been dealing in recently. I've been an Epyx fan since 1982, when I bought my first 64, and I have yet to use a piece of its software that I consider a disappointment. I'm happy to say that *L.A. Crackdown* is no exception.

In this scenario, you are a veteran police detective returning from vacation and finding you've been assigned to a very important undercover operation. A major drug ring, headed by

what appears to be a legitimate businessman, is about to flood the city with a synthetic narcotic from the Far East. The case has top priority. You are supplied with a comprehensive file on the suspects, a high-tech surveillance van, and the services of an undercover rookie policeman to assist with the legwork. Your mission is to collect enough evidence to put the mastermind and his gang of thugs in the slammer and to prevent the drugs from reaching the streets.

You're a veteran police detective who's been assigned to a very important undercover operation.

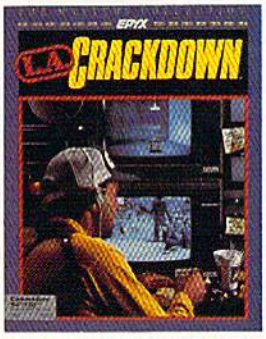
Before starting the investigation, you'll want to read the thorough case file (documentation) and choose a partner. Review a roster of the top four rookie candidates and decide whether you want to work with the martial-arts expert or team up with a six-foot-plus 212-pounder who is packed with muscles. If brains or marksmanship is your preference, choose another candidate.

You communicate with your rookie via a concealed wireless earpiece that he wears. This lets you direct his movements as he prowls through darkened buildings in pursuit of incriminating evidence. You can have him search various locations and plant bugs in telephones. You can even direct him to chat with the cautious suspects in an effort to extract valuable information. Be aware that your sidekick has a mind of his own, so if you ask him to do something stupid or work him too long without sleep, he'll quit. And since you cannot fit inside your computer to replace him, you're advised to be a good boss.

L.A. Crackdown is not a typical adventure/strategy game that requires a vast amount of keyboard input. A major portion of the game is joystick-controlled. Getting around in the environment is as easy as selecting an action from the menu and pressing the fire button.

Your computer screen represents a two-camera view from your surveillance van and is divided into six easy-to-understand sections. At the top left is a television picture of your rookie as he investigates the interior of a building. The top right displays the television picture of the building's exterior. Flanking the menu options in the center of the screen are the appropriate floor plans, clock/calendar, and your handy-dandy Bug Status Indicator.

The animated micrographics in *L.A. Crackdown* are excellent and give the player a terrific feeling of realism. When you move from one room to another or follow a suspect's car, it's a joy to watch the animated action unfold.



Plan to use a fair amount of educated guesswork in attempting to solve this case. Clues are not exactly lying around for you and your partner to trip over. You will have to learn your suspect's patterns and habits without drawing too much attention to yourself. If you keep stumbling across the three henchmen guarding a warehouse and an airport hangar, they'll shoot your unarmed partner, thus ending the game. Using the Save option before entering

Faster than a Speeding Cartridge
More Powerful than a Turbo ROM
It's Fast, It's Compatible, It's Complete, It's...

JiffyDOS

Compare features and see why JiffyDOS is far more than just another "Rapid" disk drive speed-enhancement system!

Features	JiffyDOS	RapIDOS
Leaves Cartridge & User Ports Open	YES	NO
Works with MODEMS and communications software	YES	NO
Requires additional cabling between computer & drives	NO	YES
Supports more than two disk drives	YES	NO
Simple ROM installation-no additional hardware	YES	NO
Extended DOS Wedge with 14 additional commands	YES	NO
Guaranteed compatible with all software & hardware	YES	NO
Load 202-blocks (stock 1541 - 128 seconds)	8	15
Save 202-blocks (stock 1541 - 150 seconds)	30	98
Format 35 tracks (stock 1541 - 90 seconds)	21	24
Read/Write PRG, SEQ, REL, USR files up to 15x faster	YES	?

JiffyDOS is available for C-64, 64C, SX-64, C-128 & C-128D (JiffyDOS/128 speeds up both 64 and 128 modes) and 1541, 1541C, 1541-II, 1571, 1581, FSD-1&2, MSD-1&2, Excel 2001, Enhancer 2000 disk drives. System includes ROMs for computer and disk drive, stock/JiffyDOS switching system, illustrated step-by-step installation instructions, User's Manual, Money-Back Guarantee, & unlimited customer support.

C-64/SX-64 systems $49.95; C-128/C-128D systems $59.95; Add'l drive ROM's $24.95
Please add $4.25 shipping/handling per order. VISA/MC, COD, Money Order accepted
Call or write for more information. Dealer, Distributor, & Users' Group pricing available
Please specify computer and drive when ordering

Creative Micro Designs, Inc.
P.O. Box 789, Wilbraham, MA 01095 Phone: (413) 525-0023
50 Industrial Dr., Box 646, E. Longmeadow, MA 01028 FAX: (413) 525-0147

COMPUTE!'s 1989 Commodore 64 and 128 Buyer's Guide

The complete Buyer's Guide to software and hardware for the Commodore 64 and 128.

- all categories
- descriptions
- prices
- names and addresses

Available on newsstands nationwide

OR

Reserve your copy direct from the publisher now. Just fill in and mail the coupon.

☐ Yes, please send me _____ copies of *COMPUTE!'s Commodore Buyer's Guide*. I enclose $3.95 plus $2.00 postage and handling ($5.95 total) for each copy.

Total amount enclosed _____

Name _____
(Please print)

Address _____

City _____ State _____ Zip _____

Send your check or money order only—no charges on this special offer—to:

COMPUTE!'s Buyer's Guide
Single-Copy Sales
P.O. Box 5188
Greensboro, NC 27403

dangerous territory will allow you to resurrect your fallen comrade and continue the game without starting over.

Hide as many as four bugs and listen in on telephone conversations at any of the four stakeout locations. These bugs offer valuable information and can help move your case along quite nicely. A flash on the bug indicator alerts you that an important call has been recorded.

Working undercover is tedious: It requires a lot of waiting for something to happen. Fortunately, there is a Time Compress option available to make time zip by. If a suspect makes a move while you're using the option, the time compression stops and action resumes.

If there is a down side to this very impressive crime adventure, it's the incessant disk drive access required to play the game. The 1541 really gets a workout, as the situation is constantly changing, prompting the program to search for information on the disk. If you own a 1571, the problem is not as noticeable.

Complex games of strategy such as this require a commitment from the player to stick with them. This is easy with *L.A. Crackdown* because the unfolding story holds your interest and keeps you coming back time and again to gather more evidence.

Epyx has a history of developing fine software products that skillfully entertain. *L.A. Crackdown* is a bold step in a new direction that will attract gamers of all ages.

—Steve Hedrick

Epyx
600 Galveston Dr.
Redwood City, CA 94063
$39.95

The Three Stooges

I'd say that to know them is to love them, except for the fact that I know a lot of people who not only don't love the Stooges, but are actually offended by them. Go figure! As for myself, I love 'em, maybe even more today than when I first made their acquaintance as a kid. There's something about Larry, Moe, and Curly that ages well, like fine wine or comfortable tweeds.

Part of their modern-day appeal may simply be nostalgia, but the more likely reasons are the universality of slapstick, of which the boys were the absolute masters, and the basic sweetness that underlies even the most violent of Stooge routines.

Both of these aspects have been captured by Cinemaware, and it's high time, too. Before now, the Three Stooges had made, at best, a shaky transition to the modern world. In the late fifties, their films moved from shorts to full-length features, but the victory was hollow at best. For one thing, Curly, the soul of the outfit, had died. And with the exception of Shemp, subsequent replacements were hardly fit to have their toes stomped by Curly's shoes, much less to fill them. The Stooges' features were hampered by a trio only two-thirds complete.

A cartoon series in the sixties was even worse. Lousy animation, inaccurate characterization, dumb plots, bad writing—the Stooges could hardly have been more abused. Certainly their accomplishment was safe: All of those gorgeous black-and-white shorts would for years be run in the wee hours of the morning. Still, it would have been nice to see the Stooges in the modern world.

Enter Cinemaware, which achieves the translation that the movies and cartoons mangled. *The Three Stooges* is not only a terrific piece of action software, but it's also a genuine addition to the Stooges' canon.

Cinemaware has long identified its products as movies, layering cinema-style credits and narrative over interactive arcade sequences. The approach has worked quite well, generating hits such as *Defender of the Crown*. Lately Cinemaware has worked to stretch its format beyond arcade-level action. Plot and narrative are figuring more and more highly in the company's releases, with interior arcade games becoming increasingly integral, if not subordinate, to storytelling.

But the company hasn't forgotten its roots, either: *Stooges* is a good example. While the game depends on arcade sequences, they are *great* arcade sequences, besides which, if ever there was a subject suited to arcade adaptation, it's *The Three Stooges*. Slapstick was the Stooges' trademark, and slapstick makes a fine foundation for an arcade-style computer game.

There's also a story, albeit a minimal one. (Then again, the Stooges' shorts weren't exactly loaded with plot.) This time, our guys have to raise a substantial chunk of change in order to save an orphanage and, not incidentally, raise themselves in the estimation of three beautiful women. Slapstick violence is tempered by worthy goals—the boys would have loved it.

The money can be raised in a variety of ways, each of them based upon a classic Stooges routine. Stooge fans will instantly recognize the mad gurney race through crowded hospital corridors, Curly's boxing skills being enhanced by Larry Fine's fiddling, a high-society pie fight, and, perhaps the most famous routine of all, the duel between Curly and a bowl of vicious oyster stew.

Each of the contests is well-realized,

with action that moves in the true Stooge manner. Between events, there's a chance to play the famous Stooge slapping game. Everything runs to the accompaniment of classic Stooge music. Digitized sounds and voices also remind players of the original Stooges.

That this package is a labor of love is obvious from the (very funny) title sequence throughout the program. Documentation explains the game mechanics—which are simple enough for a child to operate, yet challenging enough for an adult—while also paying tribute to the Stooges themselves.

A game must rise or fall on the strength of its play, and here Cinemaware rises very high indeed. Each scenario delivers solid action and interplay while also communicating that distinctly Stoogey atmosphere. Joystick control of both individual events and overall interface is smooth and, even at the game's higher levels, reasonable. I never felt that I was robbed of points because the stick didn't respond fast enough.

A purist might insist, I suppose, that the game would be more accurate in grainy black-and-white, but Cinemaware's artists have given the game's coloration enough of an Art Deco ambience so that the screens contribute to the overall 1930s feel of the game. (Fans of black-and-white will find a nice touch upon booting the program.) Animation is excellent throughout—you've never quite seen a pie fly until you've seen one fly here.

What would the Stooges themselves have thought of this project? First, being the fellas that they were, they'd have been happy to help save the orphanage. And, being the boys that they were, they also would have slapped, gouged, and tugged each other for control of the joystick.

In other words, they'd have loved it. And anyone who doesn't is a chowderhead, or at least a wiseguy. Yeah? Yeah!

After far too long an absence, the Three Stooges are back.

—Keith Ferrell

Cinemaware
4165 Thousand Oaks Blvd.
Westlake Village, CA 91362
$34.95

The GOLD Collection

KNIGHT GAMES

All the atmosphere of Medieval England brought vividly to life in this superbly animated multi-level action game that contains 8 different Medieval events.

IBM SCREEN SHOT

IBM SCREEN SHOT

Battle against other Knights using swords, axes, staffs, ball and chain or test your skills with crossbows and longbows.

Features include:
One on One combat mode (2 player)
One player versus the computer (1 player)

Available for:
C64/128
(joystick required)
$9.99

or IBM PC/Tandy and compatibles (CGA or EGA card and color monitor required), $14.99

IBM SCREEN SHOT

SLAM DUNK

A high energy simulation of "Two on Two" basketball that feels like the real thing. Slam-dunks, lay ups, ally oops and stat features, great sounds and animated graphics generate exciting and addictive gameplay.

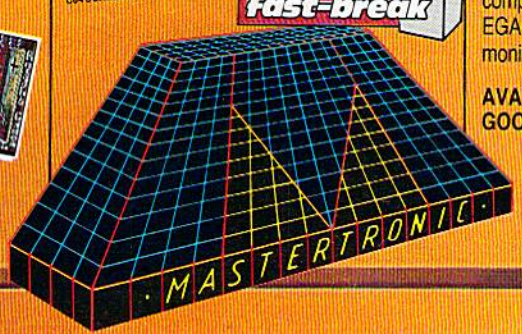
Available for C64/128 (joystick required) $9.99

Available for IBM PC and compatibles fall '88

C64 SCREEN SHOT

C64 SCREEN SHOT

C64 SCREEN SHOT



TRILOGY featuring Venom – Shard of Inovar – Kobyashi Naru

3 different lands 3 different adventures 3 different challenges

IBM SCREEN SHOT

IBM SCREEN SHOT

All the three graphic – text adventures featured in TRILOGY combine super graphics and text into a challenge guaranteed to stretch your mind.

Available for:
Commodore 64/128
$14.99

or IBM PC/Tandy and compatibles (CGA or EGA card and color monitor required) $14.99

IBM SCREEN SHOT

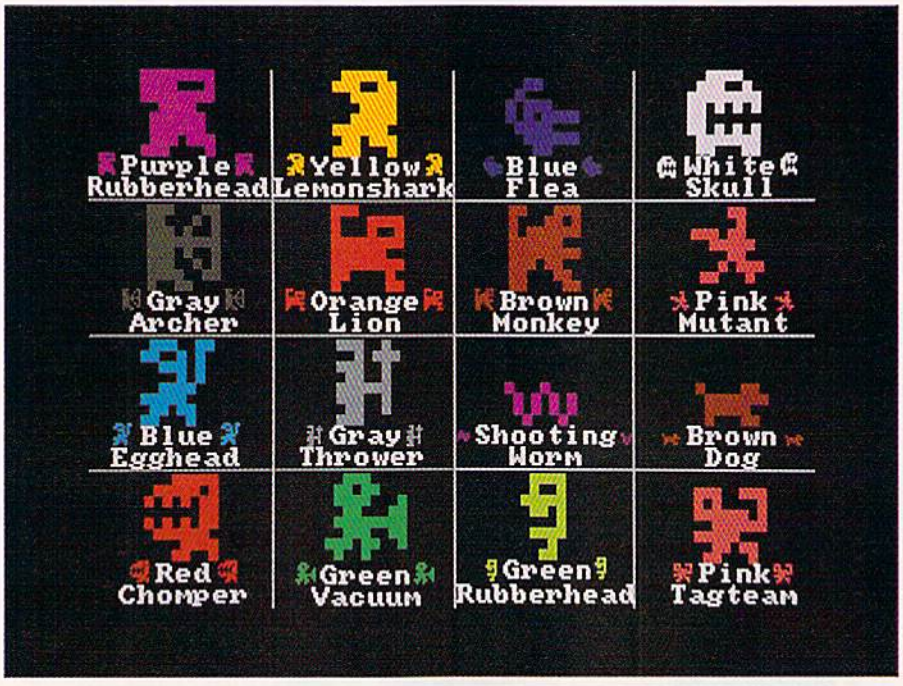
AVAILABLE FROM MOST GOOD SOFTWARE STORES

OR CALL:
MASTERTRONIC INTERNATIONAL INC.
711 WEST 17th ST., UNIT G9,
COSTA MESA, CA 92627.
TEL. (714) 631-1001

"Commodore" is a trademark of Commodore Business Machines Inc.
"IBM" is a trademark of IBM Corporation
"Tandy" is a trademark of The Tandy Corporation

CROSSROADS II

PANDEMONIUM



Steve Harter

It's been a year since you've come to the crossroads, and things haven't gotten much better. In fact, it could be said that things are significantly worse. New gangs of creatures have moved in. They're smarter. They're faster. They're more powerful.

"Crossroads II: Pandemonium" is an arcade-action game that will pull you out of your seat and onto an action-packed screen. Race down the halls. Shoot the bad guys before they shoot you. Outrace the creatures to pick up spars and build up your shields. Crossroads II features more action on your 64's screen than you've ever seen.

Last December we published "Crossroads," a graphically stunning one- or two-player action game for the 64 that introduced our readers to such creatures as the voracious Yellow Lemonshark and the dastardly Purple Rubberhead. The author has improved upon his excellent original, adding new mazes, creatures, and challenges. When you play "Crossroads II," you'll understand the meaning of the word *pandemonium*.

GETTING STARTED

Crossroads II is written in machine language. Type it in using "MLX," the machine language entry program located elsewhere in this issue. When you run MLX, you're asked for the starting and ending addresses of the data you'll be entering. When MLX prompts you for the addresses for Crossroads II, respond with the values given below.

Starting address: 0801
Ending address: 21C0

Be sure to save a copy of the program to tape or disk before exiting MLX.

Crossroads II loads and runs like a BASIC program. When you're

continued on page 40

Crossroads II Maze Editor

Randy Thompson

You've played "Crossroads II: Pandemonium." Now use the "Crossroads II Maze Editor" to modify the game. When you decide where to put the corridors, you control the tempo, difficulty, and danger of the game.

Crossroads is an exciting one- or two-player game that's played on an unpredictable battlefield of corridors, sharp turns, and dangerously spacious pitlike areas where the phrase *take cover* has little, if any, meaning. With Maze Editor, you can modify or completely redesign the eight different mazes used by this frantic game. The maze editor wedges into Crossroads II, allowing you to create mazes interactively: Just draw your maze using a joystick and press a key to reenter the game and test your maze. If you find something wrong, just press RESTORE to return to the maze editor and change what you don't like. It's that easy.

Maze Editor offers several editing features: reverse, clear, copy, paste, undo, and save. When you save your mazes to disk, a whole new copy of the Crossroads program is saved along with them. This way, all you have to do is load the new version of Crossroads. You can have several versions of the game, all on the same disk.

GETTING STARTED

Use "MLX," the machine language entry program found elsewhere in this issue, to type in Maze Editor. When MLX prompts you, respond with the values given below.

Starting address: C800
Ending address: CDC7

Be sure to save a copy to disk when you've finished entering the program.

To install Maze Editor, enter

```
LOAD "MAZE EDITOR",8,1
NEW
SYS 51200
```

Now, load and run Crossroads II.

MAZE EDITING KEYS

Key	Function
SHIFT-R	Reverse maze
SHIFT-U	Undo editing changes
SHIFT-C	Copy current maze into paste buffer
SHIFT-V	Paste maze
CLR/HOME	Erase maze
F1	Previous maze
F3	Next maze
F5	Save new version of Crossroads with modified mazes
F7	Exit editor and return to Crossroads

Note: Undo restores the maze to the state that it was in when you last moved to that maze using f1 or f3, pasted to that maze using SHIFT-V, or saved the program using f5. Any editing changes made between these times can be undone with SHIFT-U.

CREATE A WORLD

To edit a maze, press RESTORE while Crossroads II is in demo mode (that is, while the words *Crossroads II: Pandemonium* appear at the top of the screen). The current maze number (1–8) appears in the upper right corner of screen. (The editor comes up with the maze that was on the screen when you pressed RESTORE.) Move through the eight mazes with the f1 and f3 keys.

Using a joystick plugged into port 1, move the white blinking cursor. Editing works the same as in the popular *GAZETTE* programs "Ultrafont +" and "Sprite Magic." To draw, press the fire button while on top of a space and move the joystick. Press the fire button while on top of a wall and move the joystick to erase. To move the cursor without drawing or erasing, move the joystick without pressing the fire button. Mazes must be symmetrical, so everything drawn is "mirrored" to the right-hand portion of the screen (you can draw only on the left portion of the screen).

To quit edit mode and return to Crossroads, press f7. To save your new mazes, press f5. Enter a filename. A new copy of the Crossroads program with your mazes is saved to disk. You must choose a filename that is unique, as the maze editor does not offer a save-with-replace option. The save option saves only to disk device 8. You cannot save mazes to tape.

FOLLOW THE RULES

There are certain rules that you must follow when creating mazes. You must never leave a single isolated square on the screen. If an enemy creature beams into that space, the game locks up. You can't place a wall in the square where your player starts the game (and be sure to leave somewhere to go from this square). And finally, you must be sure that there are at least 40 or more blank spaces on the screen for enemy creatures to appear.

If you make a mistake in drawing your maze and Crossroads II locks up, press RUN/STOP-RESTORE. Then type SYS 51200 to reinstall Maze Editor. Type RUN to start Crossroads II.

You can't determine the character or character color used to draw your maze—this is determined randomly by the program. Crossroads II always uses mazes 1–4 for levels 1–4. Mazes for level 5 and above are randomly chosen from the eight mazes available. The program never chooses to use the same maze twice in a row.

Finally, Maze Editor works with Crossroads II only. It does not work with the original "Crossroads."

See program listing on page 95.

ready to play, plug a joystick into port 1 (or plug in two joysticks for a two-player game), load the program, and type RUN.

THE CAST OF CREATURES

There are 16 different types of creatures in Crossroads II. Five of the creatures from the original Crossroads have moved out; four remain. There are 12 new creatures, and only one is friendly—the small Brown Dog. In fact, he can help you by killing the more dangerous creatures.

The game begins in Demo Mode, which gives you a chance to see how the creatures interact. You'll see 8 of the 16 creatures that live in Crossroads II. Take a close look at each one. Does it shoot bullets or other projectiles? Does it like to cluster in groups with other creatures of the same type? To see a different maze and different creatures, press f7.

Choose a starting level by pressing a key 1–9 (level 1 is the easiest); select the number of players by pushing the joystick forward. (Look at the upper right corner of the screen. You'll see one little man in one-player mode, two little men in two-player mode.) To start play, press the fire button. Creatures begin to appear in the maze. You (and your opponent, in a two-player game) appear near the bottom of the screen.

You can pause Crossroads II at any time during the game. Simply press f5. While the game is paused, you can change the color of your player. Press f1 to change player 1's color; press f3 to change player 2. Keep pressing until you get the color you want.

Use the joystick to move, and press the fire button to shoot. By holding down the trigger, you can fire a deadly stream of bullets—you *never* have to reload.

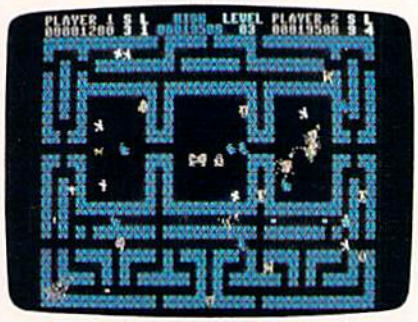
You acquire shields by picking up the whirling, white spars. Shields protect you from being destroyed by shots. (If a creature picks up a spar, it will also be protected.) You lose a shield each time you are shot. If you're hit without a shield, you lose a life. You move on to the next maze after you've collected five spars. You receive 500 points for each spar you collect.

Crossroads II features two new kinds of spars: Red spars give you extra firing power (you shoot more bullets faster), while blue spars double your speed. This new superspeed may take a while to get used to, but it's a powerful aid once you've mastered it. You lose these special powers the next time you die.

At the beginning of the game, you're given four lives and three shields. The number of shields and the number of lives are indicated under the letters *S* and *L* at the top of the screen.

Whenever a player or a creature dies, its spars are randomly distributed throughout the maze.

You can stop Crossroads II by pressing RUN/STOP-RESTORE. However, BASIC's pointers may be corrupted, so it's best to simply turn off the computer when you've finished playing.



Keep your wits about you—every alley is dangerous in "Crossroads II."

A PLAYER'S NOTEBOOK

Because there are so many dangerous creatures in Crossroads II, you might want to take notes as you encounter them. Here's some inside information to help you get started.

You'll hear and see the creatures appearing at the beginning of each level. They appear five at a time. As you're playing through the level, extra creatures may appear. Watch out for creatures that appear right next to you—back off and shoot them immediately.

Several of the creatures try to kill by running into their enemies. Note that the shields of these creatures are *not* decreased when they attack.

There are two types of rubberheads in Crossroads II: the Light Green Rubberhead and the Purple Rubberhead. Don't shoot a rubberhead in the back—the bullet will bounce right back toward you. To kill a rubberhead, you must shoot it as it charges you.

Some screens have passageways that are unblocked for the entire length of the screen. If you shoot down one of these passageways, your bullet continues wrapping around the maze indefinitely (or until it hits something—watch your back!). A good strategy is to duck into one of these passageways, fire a few rounds, and then get out. Hopefully, a few unsuspecting creatures will blunder into the ambush.

If you're on a level that has a large number of a single type of creature, be sure not to kill off that creature's enemies. Let the enemies do their damage; then kill off any creatures that remain.

On the higher levels, you may encounter the Green Vacuum, a creature that can instantly suck up its enemies, despite shields. If you get sucked up, you lose all your shields and any special powers you have acquired.

A dog is man's best friend. The small Brown Dog cannot harm you. Don't shoot the dog; it will do its best to try to destroy your enemies. Above level 19, the dog gains strength, speed, and courage.

When the white creature eats a spar, its speed increases. Do your best to keep it away from spars.

Every 30 seconds, the speed of the level increases. It's in your best interest to finish levels as quickly as possible.

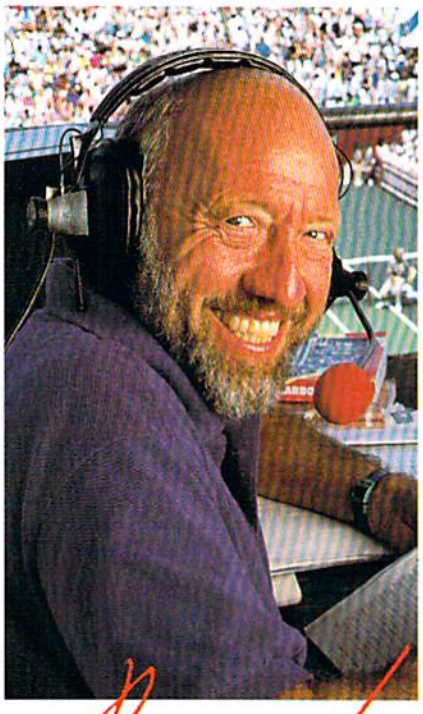
When the light red human mutant walks into the light red creature, look out! The mutant jumps onto the creature to form a worthy opponent. Above level 16, this combined supercreature can appear already formed.

If no bullets or other creatures are nearby, a creature can turn invisible. For this reason, be sure to shoot as you round corners, or you may never know what hit you.

Crossroads II is quite a challenge. Beginners may want to try the original "Crossroads" first (December 1987). Look elsewhere in this issue for information on ordering back issues of *GAZETTE* magazines and disks.

See program listing on page 91.

ANNOUNCING ACCOLADE'S NEW SPORTS GAMES.

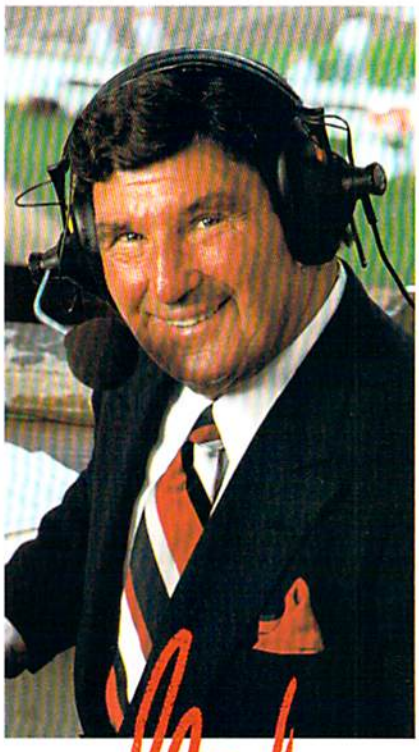


BUD COLLINS
Television tennis analyst

"What do I expect from a computer tennis game? Realism. I want to sense the power of a strong forehand, the ease of a smooth backhand. Accolade's Serve & Volley gives me that realism—and more.

"Serve & Volley truly captures the essence of the game—the action, the strategy, the pressure. You can select and place your shots via the animated "Strobe-O-Stroke" graphics. There's match or tournament play, three levels of difficulty, even three different court surfaces.

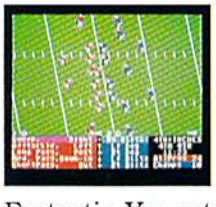
"Why should I leave the office to cover a tournament? Now I can play one on my computer with Serve & Volley."



HANK STRAM
Radio voice of NFL Monday Night Football

"I've seen some great moves on the football field but nothing compares to the moves you'll find on 4th & Inches computer football. This is real pro football action with 11 animated players per side. It's great! The ball's snapped and you have 22 guys running around the screen buttin' heads!

"But the best part about 4th & Inches? The control. I pick the starters. I control the key players on offense and defense. Heck, this is a head coach's dream come true! And the playbook? Fantastic. You get a pro style playbook with 20 plays and 11 different formations.



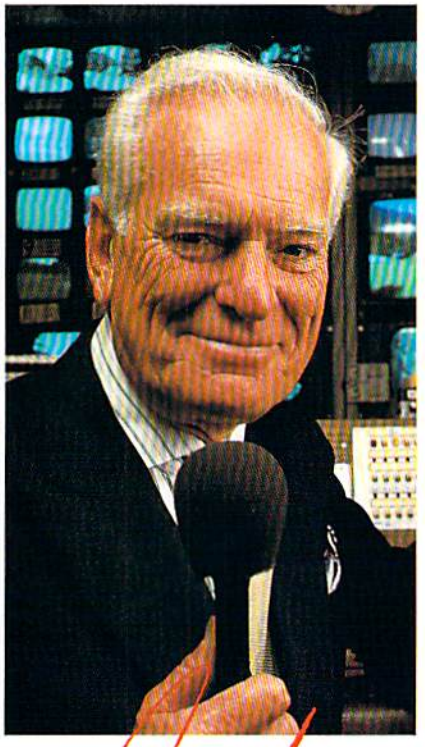
"Somebody at Accolade really knew their X's and O's when they drafted 4th & Inches. Great game plan, guys!"

MARV ALBERT
1988 Olympic boxing commentator

"I used to think my broadcast booth at ringside was the closest I'd ever come to the true boxing experience. Then I played T.K.O. computer boxing. Talk about "up close and personal!" T.K.O. put me right in the ring, face to face with a heavyweight champ.

"During a fight I like to do all the jawing. With T.K.O. I got to jab at a fighter's jaw. I threw a right… it landed! I could actually see those familiar signs of wear and tear on the champ's face. At the bell, the champ had a black eye, a fat lip and—I suspect—a bruised ego.

"It's a unanimous decision. Accolade's T.K.O. captures the feeling of boxing like no other game.



JACK WHITAKER
ABC golf announcer

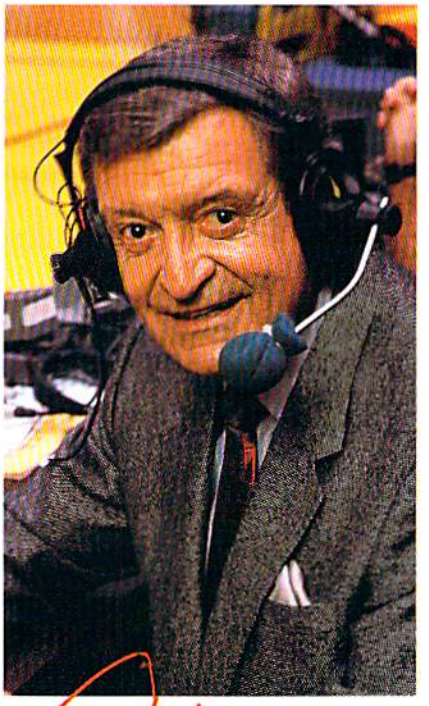
"Jack Nicklaus is unquestionably the greatest golfer of his time and

I've been fortunate enough to follow his play on the greatest golf courses in the world.

"Jack Nicklaus' Greatest 18 Holes Of Major Championship Golf is the Golden Bear's personal selection of the most challenging holes in all of golf. Holes that have decided the four major championships.

"Accolade has come up with a simulation that not only recreates each hole with stunning accuracy—but it allows the player to golf against a computerized Jack Nicklaus. Quite an accomplishment.

"Jack never settles for second best. This is the computer golf game that others will be judged by for years to come."



CHICK HEARN
Voice of the Los Angeles Lakers

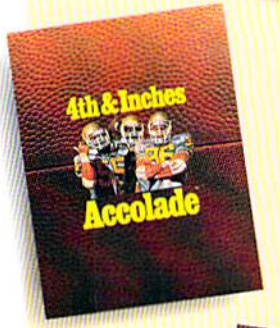
"To play championship basketball, you've got to have a great fast break. To play three-on-three, full court computer basketball you've got to have Accolade's Fast Break.

"No other computer basketball game gives you this much control and playability. You run the offense and defense. There are more plays, more players and more shots. And the thing that really impressed me was the network television court perspective. The animation was so fluid—I thought I was watching my monitor at The Forum!

"Take it from a guy who's

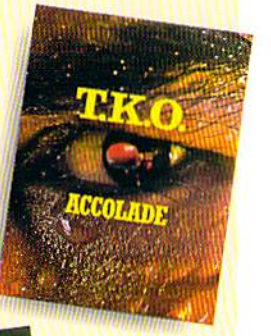
seen his share of great fast breaks—Accolade's Fast Break is a slam dunk."

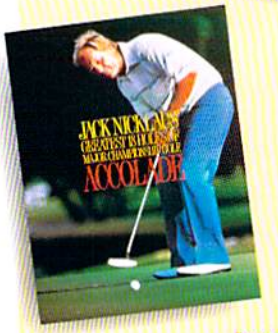
Available on C64/128, IBM PC, Tandy & compatibles and Apple IIGS.



Available on C64/128, IBM PC, Tandy & compatibles, Amiga and Apple IIGS.

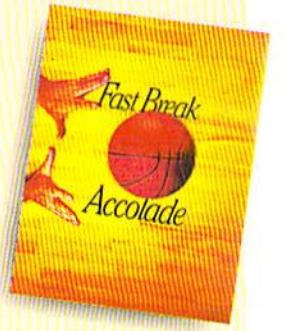
Available on C64/128, IBM PC, Tandy & compatibles.





Available on IBM PC, Tandy & compatibles, C64/128, Amiga and Apple IIGS.

Available on C64/128 and IBM PC, Tandy & compatibles.



How to order:
Visit your favorite retailer or call
800-245-7744
(In Colorado, call 303-352-6800)

ANNOUNCING ACCOLADE'S

PLAY BY PLAY™

SWEEPSTAKES

Win your choice of a Sports Fan Fantasy for two!

OFFICIAL ACCOLADE MAIL-IN ENTRY FORM

Complete and mail in time for receipt by 3/31/89 to: ACCOLADE PLAY-BY-PLAY SWEEPSTAKES, P.O. Box 914, Wilton, CT 06898-0914.

My choice of Sports Fan Fantasy is an opportunity to... (check ONE please):

- ☐ Visit with and attend a boxing match broadcast by Marv Albert.
- ☐ Visit with and attend a Los Angeles Lakers game broadcast by Chick Hearn.
- ☐ Visit with and attend an NFL Monday Night Football game broadcast by Hank Stram.
- ☐ Visit with and attend a tennis tournament broadcast by Bud Collins.
- ☐ Visit with and attend a PGA golf tournament broadcast by Jack Whitaker.

YOUR NAME (please print) _____

YOUR COMPLETE ADDRESS _____

CITY/STATE _____ ZIP (required) _____

NAME OF RETAIL OUTLET YOU SHOP FOR SOFTWARE _____

CITY & STATE OF THAT STORE LOCATION _____

Type of Computer Owned: ☐ IBM/Tandy & Compatibles ☐ Commodore 64/128
☐ Apple II Series ☐ Apple IIGS ☐ Other _____

Offer good only in U.S.A. Offer void wherever restricted or prohibited by law.

ACCOLADE®

OFFICIAL RULES – NO PURCHASE NECESSARY

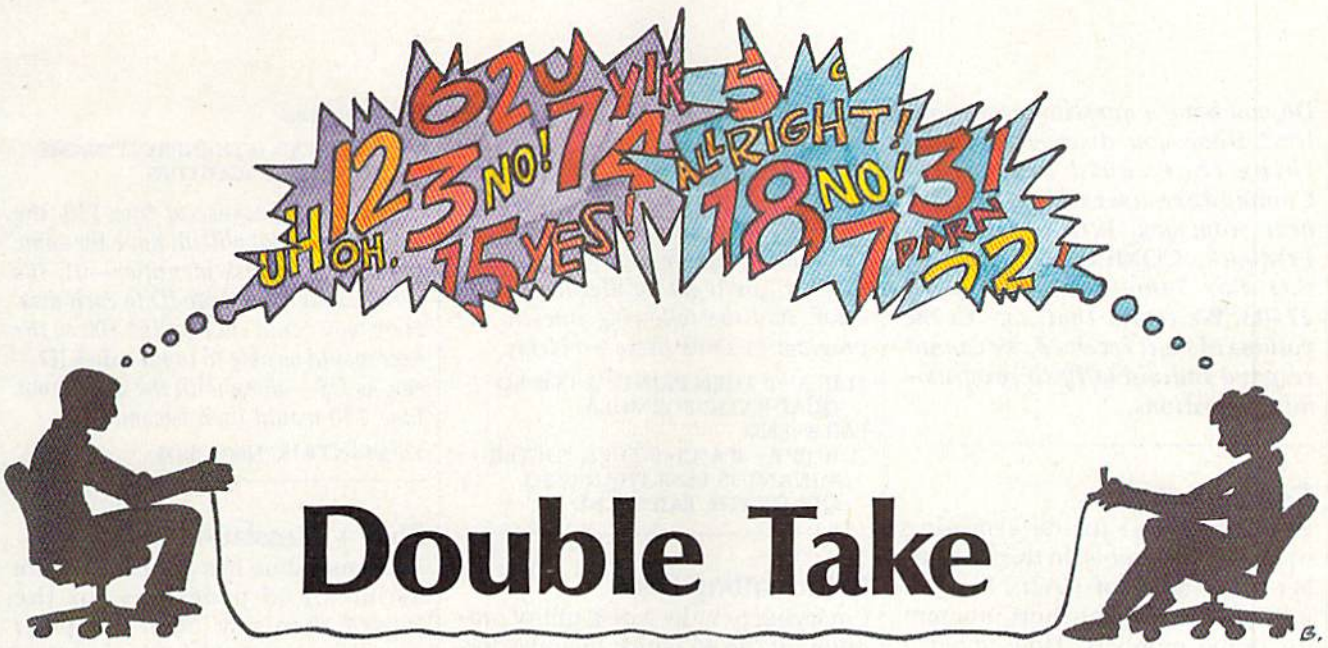
How to Enter. Provide all the information called for on the official entry form (including your choice of Sports Fan Fantasy prize), or print this same information on a plain 3" x 5" piece of paper and mail your entry in time for receipt by March 31, 1989 to: Accolade Play-By-Play Sweepstakes, P.O. Box 914, Wilton, CT 06898-0914. Enter as often as you wish, but each entry must be sent in a separate envelope via First Class Mail.

Prize Awards. The five (5) different Sports Fan Fantasies listed on the entry form comprise this program's prize offering; each fantasy to include such transportation arrangements and other accommodations as may be necessary for two persons traveling together, including the sports event tickets. All arrangements shall be made by Accolade at its discretion as to announcer visit time and place and event selection. Applicable period for fan fantasy arrangements shall be 4/15-12/31/89. Each winner will be offered the option of receiving $1,500 cash instead of the fan fantasy prize for two.

Winner Drawings. One winner will be chosen for each of the five different Sports Fan Fantasy prizes by means of a series of random drawings to be conducted on 4/1/89 by AMA, Ltd., an independent judging organization whose decisions are final. Prize winners will be notified by mail by 4/8/89. Odds of winning the Sports Fantasy indicated as an individual entrant's choice depend on the number of entries received indicating that same event choice. Winners will be required to provide social security number and to sign an affidavit of eligibility and publicity/travel release. Tax liability on prize winnings is responsibility of each winner. Prizes are not transferable, although any prize won by a minor will be awarded in the name of a parent or legal guardian.

Eligibility. Sweepstakes open to all U.S. residents except employees of Accolade, Inc., its marketing agencies, this program's suppliers, and their immediate families. Void wherever prohibited or restricted by law. To request a list of the prize winners, send a stamped, self-addressed envelope before 4/1/89 to: Accolade Play-By-Play Winners, P.O. Box 7180, Wilton, CT 06897-7180.

ALL REGISTERED TRADEMARKS AND NAMES ARE PROPERTIES OF THEIR RESPECTIVE OWNERS.



Double Take

Mark Tuttle

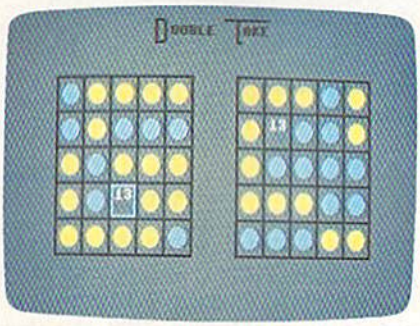
Two players compete in this brain-twisting strategy game for the 64. You play on two boards at once—be sure to watch both. Joystick required.

You go brain to brain against a friend when you play "Double Take," an addictive strategy game that demands your full concentration. Although the rules are complex, you'll master them quickly. After a few games, you'll be preparing traps for your opponent.

The object of the game is to place five pieces of your own color in a row—horizontally, vertically, or diagonally. But consider this: You play on two boards at once. The plays you make on one board affect the other board. And you can change your opponent's pieces to your color by placing one of your pieces between two of your opponent's pieces. These twists make Double Take a genuine challenge.

Getting Started

Double Take is written in BASIC. To avoid typing errors, enter the program using "The Automatic Proofreader," found elsewhere in this issue. When you've finished typing, be sure to save a copy of the program to tape or disk.



Challenge a friend to a game of "Double Take," a brainteaser that's played on two boards.

When you're ready to play Double Take, plug in two joysticks. (If you have only one joystick, plug it into port 2.) Load the program and type RUN. You'll see Double Take's title screen. Press 1 if you have one joystick plugged in or 2 if you have two. If you use one joystick, you'll have to pass the joystick between players after each move.

There are two numbered square boards, with five squares per side. Note that the numbers are scrambled and that they are in different places on the two boards. You use the joystick to move and the fire button to place pieces on the left board. When you put a piece down, a piece also goes down on the right side, in the like-numbered square. For instance, suppose you put down a piece in the upper left corner of the left board on the square numbered 13. A piece would also be placed on the square numbered 13 on the right board, no matter where it was. Your goal is to place five of your pieces in a row on either board.

Once played, the pieces are *not* secure. By placing a piece between two of your opponent's pieces (horizontally or vertically only), you can change those two pieces to your color. Note that the changes occur on both boards. This rule makes the game a real mind-bender.

When one of you finally gets five pieces in a row, the game ends. Press the fire button to play another.

See program listing on page 98.

Do you have a question or a problem? Have you discovered something that could help other Commodore users? We want to hear from you. Write to Gazette Feedback, **COMPUTE!'s Gazette,** *P.O. Box 5406, Greensboro, NC 27403. We regret that, due to the volume of mail received, we cannot respond individually to programming questions.*

Computer Math

Programs exist for determining square or cube roots. In the November 1987 issue of *GAZETTE*, you printed an excellent short program for prime numbers. How about a program for quadratic equations? I never could do them in school.

Gerard W. Meister
Western Springs, IL

A quadratic equation is one of the form $ax^2+bx+c=0$, *where* a, b, *and* c *are constants. If you know the values of these constants, the trick is to find a suitable value for* x*—one which fits the equation.*

There's a formula to find x *in a quadratic equation. It looks like this:*

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Unless you know the mathematical symbols, you'll have a hard time putting this formula into a BASIC program. The formula actually gives two answers. The ± *symbol means* plus or minus. *First you use the formula with a plus sign; then you use it with a minus sign. Here's a program that brings it all together:*

```
10 PRINT "ENTER VALUES FOR A, B,
   AND C."
20 INPUT A,B,C
30 X1=(-B+SQR(B*B-4*A*C))/(2*A)
40 X2=(-B-SQR(B*B-4*A*C))/(2*A)
50 PRINT "VALUES FOR X ARE";X1,X2
```

*There is a problem, though. Certain entries will cause the program to crash. For example, if A is 0, you'll get a division-by-zero error. Also, certain combinations of values for the constants will cause the expression B*B−4*A*C to be negative. Since you can't take a square root of a negative number, you'll get an illegal quantity error. Add the following lines to the program to solve these problems:*

```
21 IF A=0 THEN PRINT "A IS 0, SO
   QUADRATIC FORMULA
FAILS":END
22 IF (B*B-4*A*C)<0 THEN "DETER-
   MINANT IS LESS THAN 0, SO
   QUADRATIC FAILS":END
```

Reformatting Disks

I'm trying to write a disk utility program for the 64 which includes formatting. I've added the following lines. When they execute, the green light on the drive blinks repeatedly, and the disk doesn't format. Is there something wrong with the program, or is it not possible to reformat a disk?

```
100 INPUT"ENTER DISK NAME";C$
110 PRINTCHR$(147)"FOR-
    MATTING..."
120 OPEN15,8,15
130 PRINT#15,"NEW0:";C$;",01"
140 CLOSE15:PRINT"...DONE"
```

J. R. Beard
Wimberley, TX

You can reformat disks. The problem you're having is in line 130. Instead of a semicolon following NEW0, *there should be a colon, so that the line reads*

```
130 PRINT#15,"NEW0:";C$;",01"
```

or, abbreviating the NEW command, as

```
130 PRINT#15,"N0:";C$;",01"
```

We'd like to make two additional suggestions. First, a disk name on a Commodore machine, like a filename, can be no longer than 16 characters. In both cases, if the name exceeds this length, only the first 16 characters are used. To avoid some confusion, you may want to make the user aware of this by adding the following line to the program:

```
105 IFLEN(C$)>16THENPRINT"NAME
    TOO LONG.":GOTO100
```

Second, because of line 130, the disks you format will all have the same two-character disk identifier—01. It's best to assign a unique ID to each disk. Here, you could change line 100 so the user would be able to input a disk ID—say, as D$—along with the disk name. Line 130 would then become

```
130 PRINT#15,"N0:";C$;D$
```

Plus/4 Translations

Your magazine has published more articles and programs for the Plus/4 than any other computer magazine I've found. My question: Is there a systematic way of converting 64 and 128 programs containing POKEs, PEEKs, and SYSs so they work on my Plus/4?

Leroy Carter
Lewisburg, TN

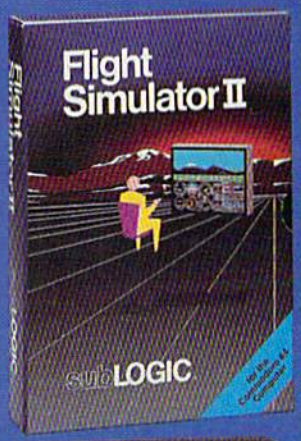
This is a question we're often asked, in one form or another. Unfortunately, the many differences between the 64 (or the 128) and the Plus/4 make such conversions difficult at best.

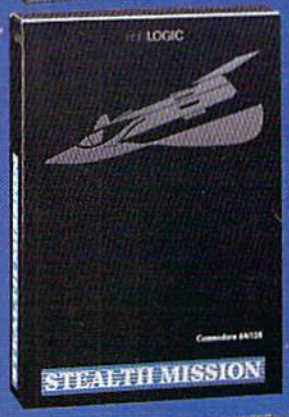
If you decide to give it a try,

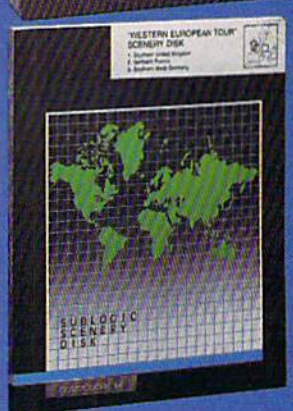
Good News, Bad News

The good news is that we haven't had enough bugs in recent programs to warrant printing our "Bug-Swatter" column. That's two months in a row now! The bad news is that there are a couple of problems with Program 3, "Font Editor," from "SpeedPrint" (October 1988). Line 1350 contains the character {TAB}. This character can be typed by holding down CTRL and pressing I. The other problem is in line 1550. If S=0, the program tries to go to a line number that doesn't exist. Change line 1550 to read

```
1550 IFS=0THEN1620
```







FLIGHT SIMULATOR

$49.95

Nearly 1.5 million copies of this classic, premium flight simulation program have been sold to date, and there's still nothing even close to it. Compatible with SubLOGIC Scenery Disks.

STEALTH MISSION

$49.95

Winner of the 1988 CES "Best Strategy Game" Software Showcase Award. This advanced-technology strategic simulation is a stunning success, with sales challenging those of Flight Simulator. With nothing comparable on the market (despite similar titles), Stealth Mission's programming polish and strategic gaming excellence set new industry standards. Scenery Disk compatible.

JET

$39.95

This award-winning jet fighter simulator defines the state of the art in action/combat simulation. Exciting and beautiful carrier-based sea missions complement multiple land-based combat scenarios. Jet's quick-reading documentation and easy flight controls provide unequalled action and fun. Scenery Disk compatible.

Special "Discover the World of SubLOGIC" promotional packaging:

* Jet for the Commodore 64/128 now includes a FREE beautiful Japan Scenery Disk, a $24.95 extra value!

* Jet is also available without Japan Scenery Disk for the special low "discover SubLOGIC" price of $29.95 through selected discount channels.

SCENERY DISKS

$24.95 each. For use with all SubLOGIC flight simulation products.

WESTERN EUROPEAN TOUR
Our latest and hottest! Detailed scenery covering southern Great Britain, northern France, and southern West Germany. The basis of our fun "Find Red Square" promotion.

JAPAN SCENERY DISK
Detailed scenery from Tokyo to Osaka. Delightful international adventure!

SAN FRANCISCO
Concentrated scenery covering San Francisco and the Bay area. A consistently best-selling favorite!

SCENERY DISK # 7
Eastern Seaboard. Includes: Washington, Charlotte, Jacksonville, Miami. Another best-seller!

SCENERY DISK # 11
North-Eastern Border. Includes: Detroit, Lake Huron. Incredible variety, from industrial Detroit to beautiful Niagara Falls!

See your dealer, or write or call for more information. All products are available on disk for the Commodore 64/128 computers. For direct orders please indicate which product you want, and enclose the correct amount plus $2.50 for shipping and handling ($1.50 for each additional package). Please specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club charges accepted.

© 1988 SubLOGIC Corporation
Commodore 64 and Commodore 128 are registered trademarks of Commodore Electronics Ltd.

subLOGIC
Corporation
501 Kenyon Road
Champaign, IL 61820
(217) 359-8482 Telex: 206995
ORDER LINE: (800) 637-4983

you'll need to obtain a detailed memory map for each computer. In this regard, Mapping the Commodore 64 *and* Mapping the Commodore 128, *available from COMPUTE! Books, are both outstanding. For the Plus/4, an excellent reference is* The Programmer's Reference Guide for the Commodore Plus/4, *by Cyndie Merten and Sarah Meyer (Scott, Foresman and Company).*

Assuming that you're attempting to convert a BASIC program, isolate all PEEK, POKE, and SYS addresses in the 64 or 128 program, and, using the memory map, determine the function of each. Access to a 64 or 128 is helpful at this point. By running the program on its native machine, you can witness firsthand what each command does. A few STOPs, strategically placed within the program, will also help.

After this, search the Plus/4 memory map for the corresponding register or ROM routine that each command references (assuming one exists), and substitute its address into the program. In this process, you'll find that most Commodore memory maps use the same label for similar or identical routines.

Should the program contain a custom machine language routine, identify what it does and decide whether the Plus/4 has the hardware to perform the same task. If it does, transfer the ML code with a monitor to a block of unused RAM on the Plus/4. If you place the code in the BASIC workspace, be sure to adjust the necessary BASIC pointers so that the routine won't be overwritten. Then, just as you did for the BASIC portion of the program, substitute the corresponding Plus/4 addresses in the code wherever necessary. For this step, you need extensive knowledge of machine language and a great deal of patience.

Because of hardware differences between the 64 (or 128) and the Plus/4, certain types of programs just won't convert without losing their essence—for instance, arcade-style game programs that use sprites. Others can be converted if you replace portions of the code with routines that emulate those found in the 64 or 128 version. Since the Plus/4 contains a more powerful BASIC than the 64 does, in some cases you can substitute a couple of BASIC commands for an entire machine language routine or for a series of POKES. For example, many 64 game programs rely heavily on the SID chip. On the Plus/4, you use the built-in sound commands instead.

When converting 128 programs to the Plus/4, note that the 128 shares a number of disk and graphics commands with the Plus/4. In fact, many BASIC programs written for the 128 will run as is on the Plus/4.

Outputting to the Printer

I wrote a short BASIC program on my 64 which contains only a few PRINTs and GOSUBs. Is there a way to send only what's in quotation marks to the printer?

Andrew DuBry
Medford, OR

The CMD (Change Main Device) statement sends output to the printer rather than to the screen. To use it, place the following line at the beginning of your program:

10 OPEN4,4,0:CMD4

At the end of your program, add this line:

1000 PRINT#4:CLOSE4

The OPEN command in line 10 opens a file or channel (number 4) to

The Best of '88 Gazette Disk

15 EDITOR'S-CHOICE PROGRAMS

The best 15 Commodore 64/128* programs from the 1988 issues of *COMPUTE!'s Gazette* are now available on one disk with full documentation.

A REAL STEAL AT $5.95
—ONLY 40¢ PER PROGRAM!

Something for every user, every taste—

- Arcade games
- Music
- Strategy games
- Utilities
- Graphics

* includes 3 128-only programs

YES! Send me _____ copies of *The Best of '88 Gazette Disk.* I've enclosed $5.95 plus $2 postage and handling ($7.95 total) for each copy.

Amount _____ Sales Tax* _____ Total _____

Name _____

Address _____

City _____ State _____ Zip _____

Mail personal check or money order for $7.95 to:

Best of '88 Gazette Disk
P.O. Box 5188
Greensboro, NC 27403

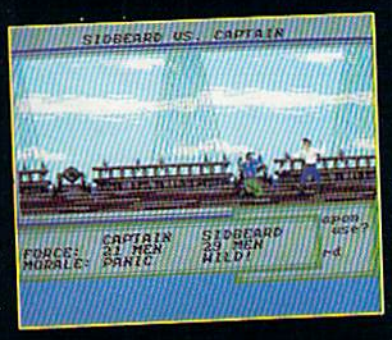
*New York residents add 8¼-percent sales tax. North Carolina residents add 5-percent sales tax. All orders must be paid in U.S. funds by a check drawn on a U.S. bank. Sorry, no credit card orders accepted. Please allow 4–6 weeks for delivery.

DARE TO BE DIFFERENT

Hot New Simulations From The Computer Craftsmen At MicroProse

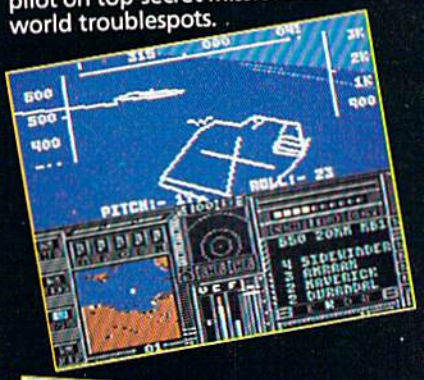
High Seas Adventure

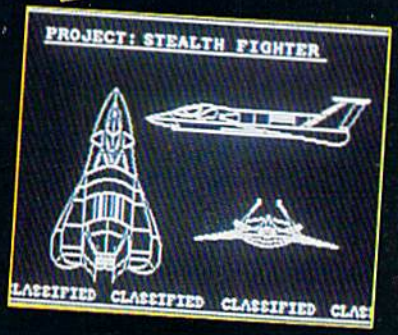
Relive the swashbuckling era of the buccaneer as a 17th century privateer captain in **PIRATES!** It's a unique gaming blend of simulation, adventure and role-playing. You'll swordfight with other ship captains, storm the fortress of a wealthy town, explore the Caribbean, and search for lost treasure. The goal: amass a fortune, gain a reputation, and retire to a life of luxury. From award-winning game designer Sid Meier, of **F-15 STRIKE EAGLE** and **SILENT SERVICE** fame.



Top Secret Air Strike

Invisibility is your greatest weapon in **PROJECT: STEALTH FIGHTER,** a simulation of the Air Force's unacknowledged super-tech jet fighter of tomorrow. You're the pilot on top-secret missions to world troublespots.





Daring Solo Missions

Become one of America's most elite soldiers in **AIRBORNE RANGER.** Cunning and fast reflexes are needed to succeed on 12 solo missions deep behind enemy lines.

Available at a Valued Microprose Retailer (VMR) near you. Call for locations. If not found locally, call for MC/VISA orders.

PIRATES! now for Commodore 64/128, Apple II, IBM-PC/XT/AT/PS2/Tandy and compatibles. Suggested retail $39.95.
PROJECT: STEALTH FIGHTER (Suggested retail $39.95) and **AIRBORNE RANGER** (Suggested retail $34.95) for Commodore 64/128. Coming soon for IBM-PC/Tandy compatibles.

MICRO PROSE™
SIMULATION • SOFTWARE

180 Lakefront Drive • Hunt Valley, MD 21030 • (301) 771-1151

the printer (device 4), and CMD diverts output from the screen to the printer. To print in upper/lowercase, specify a secondary address of 7 when opening the printer channel (for example, OPEN4,4,7).

Should your program contain a GET statement, you could encounter problems. After the GET executed, any output intended for the printer would, from that point on, be sent to the screen instead. To prevent this, change line 10 to

```
10 OPEN4,4,0
```

and all PRINTs to PRINT#4, (the comma must be present). If you decide later you want to send the output to the screen (device 3), change line 10 to

```
10 OPEN4,3
```

Relocating ML Programs

I've acquired quite a few programs for my Commodore 64. My problem is that many of them are machine language programs that reside in the same place in memory—often beginning at 49152. Is there a way to alter programs so that they occupy different areas of memory? That way, I could use them at the same time.

David Crow
McAlester, OK

Generally, unless a machine language program was designed to be relocated, this is no easy task. The following analogy will show you why.

A machine language program occupies sequential memory addresses, like adjacent houses on a street. It contains instructions to jump to different addresses in the program. Some of these instructions contain relative addresses, which is like telling someone Go to the party three houses up the street. *Others are absolute, which is like saying* Go to the party at 1115 Glenwood.

Now, suppose the city changed all the house numbers on Glenwood by adding 1000 to each address. For example, 1115 Glenwood would become 2115 Glenwood, 115 Glenwood would become 1115 Glenwood, and so on. After this, you'd still find the party if you went three houses up the street, but you wouldn't if you went to 1115 Glenwood; since the city had changed the addresses, the party would subsequently be at 2115 Glenwood.

Moving a machine language program is like changing house numbers. While the program can still make relative jumps, absolute jumps fail since the code is no longer at its old address.

When a programmer assembles a program, he or she instructs the assembler to begin at a certain address. The assembler calculates all subsequent addresses (including jump addresses) by adding to the starting address. To change the location of a program with an assembler, you specify a different starting address before actually assembling the program. The proper absolute jump addresses are then calculated by the assembler and placed in the code.

Indeed, the easiest way to relocate machine language code is using an assembler. But this requires you to have a copy of the original source code for the program and a copy of the assembler used to assemble it. Getting hold of both is usually difficult.

Another approach is to use a machine language monitor. First transfer the machine language code to the desired location and then physically change each absolute jump address. This technique is challenging and should only be undertaken by those familiar with machine language.

ON DISK

GAZETTE

5-YEAR INDEX

ON DISK

Complete from July 1983 through December 1988

Everything's included! Features, Games, Reviews, Education/Home Applications, Programming, Bugswatter, Feedback, Columns

- Superb interface, including pull-down menus, help screens, and keyboard, joystick, or mouse control
- Super-fast searching and sorting capabilities
- Options screen allows you to choose text colors, drive number, and input device
- Full documentation on disk
- Three modes of operation—Browse Mode for quick scanning, View Mode for detailed information and descriptions, and Edit Mode for adding items from upcoming issues
- Print to any printer
- Turbo-load option for maximum speed

YES! Send me _____ copies of the GAZETTE 5-Year Index Disk.

I've enclosed $5.95 plus $2 postage and handling ($7.95 total) for each copy.

_____ Amount
_____ Sales Tax*
_____ Total

ORDER NOW!

Name _____

Address _____

City _____ State _____ ZIP _____

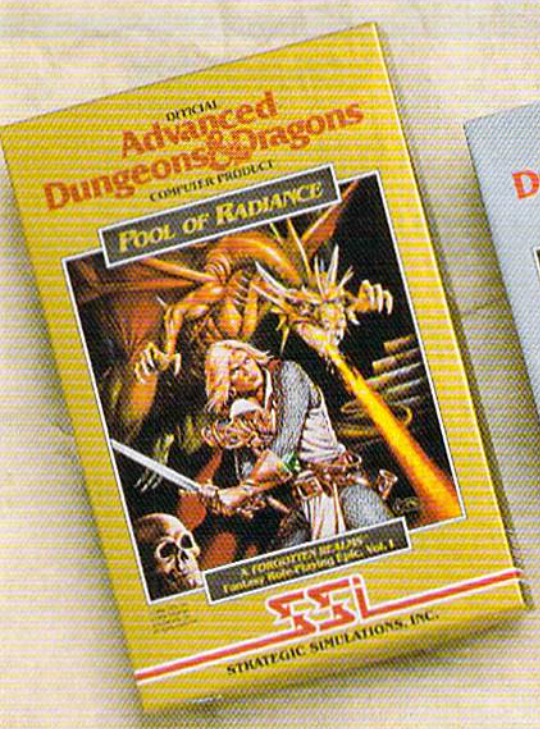
Mail personal check or money order for $7.95 to:

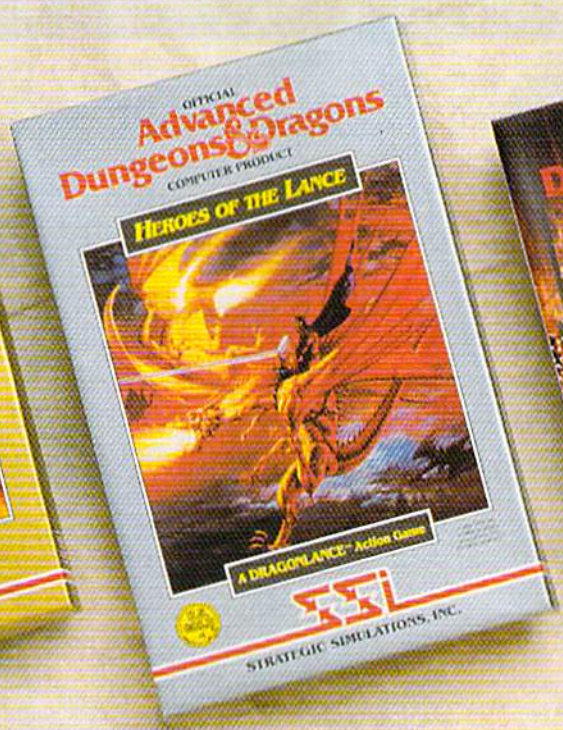
GAZETTE 5-Year Index Disk
P.O. Box 5188
Greensboro, NC 27403

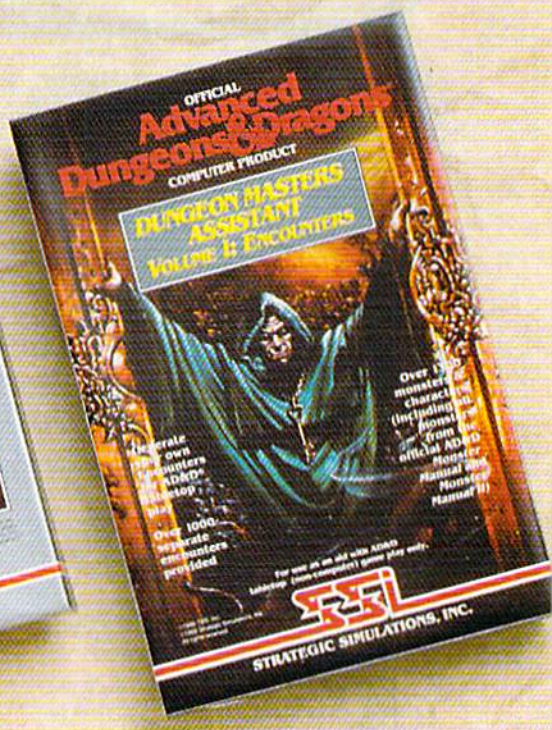
*New York residents add 8¼-percent sales tax. North Carolina residents add 5-percent sales tax. All orders must be paid in U.S. funds by a check drawn on a U.S. bank. Sorry, no credit card orders accepted. Please allow 4–6 weeks for delivery.

Advanced Dungeons & Dragons®

COMPUTER PRODUCTS







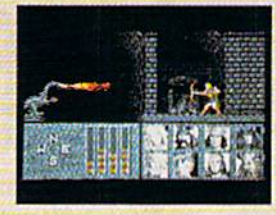
Role-Playing

POOL OF RADIANCE fulfills all your gaming fantasies. The legendary ADVANCED DUNGEONS & DRAGONS® role-playing system springs to life on your computer! Embark on dangerous quests in the magical FORGOTTEN REALMS™ game world — made incredibly real by advanced computer animation and combat that adheres strictly to AD&D® game standards. Prepare yourself for the ultimate fantasy role-playing experience!

IBM
APPLE
C-64/128

Action

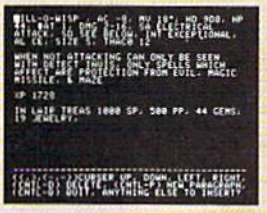
HEROES OF THE LANCE gives you non-stop excitement and fully animated action on the mystical DRAGONLANCE® game world. Guide eight Companions, each with different skills, deep into the treacherous ruins of the temple Xak Tsaroth. They will need all of your skills to help them survive the attacks of giant spiders, demons, dragons and countless other terrors. Retrieve the precious Disks of Mishakal if you can!



IBM
C-64/128
AMIGA
ATARI ST

Utility

DUNGEON MASTERS ASSISTANT, VOLUME I: ENCOUNTERS is a utility program designed to help Dungeon Masters generate encounters for AD&D® campaigns. It provides more than 1000 encounters, and over 1300 monsters and characters, including all of the monsters found in AD&D® *Monster Manuals I & II*. DMs can modify the existing data and add original monsters and encounters to the database.



IBM
APPLE
C-64/128

ADVANCED DUNGEONS & DRAGONS, AD&D, FORGOTTEN REALMS and DRAGONLANCE are trademarks owned by and used under license from TSR, Inc.
©1988 TSR, Inc. ©1988 Strategic Simulations, Inc. All rights reserved.

How To Order: Visit your retailer or call 1-800-245-4525. To receive SSI's complete product catalog, please send $1.00 to: Strategic Simulations, Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043.

SSI™

STRATEGIC SIMULATIONS, INC.

Lyco Computer

Marketing & Consultants

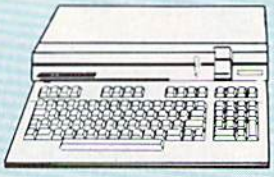
Since 1981

Air orders processed within 24 hours.

COMMODORE 128D

- 128K Std.
- 3 Mode Operation 1-64: Runs 64 software. 2-C128: Faster, more mercury for increased productivity 3-CPM: Uses Standard cpm titles

$439.95

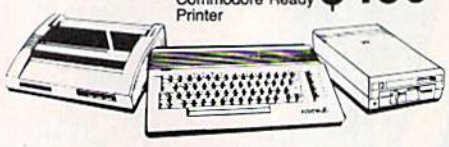


C128D Computer & Thomson 4120 $629.95

COMMODORE 64C Special System

- Commodore 64C Computer
- Excel FSD-2 Disk Drive
- Star NX1000C Commodore Ready Printer

$459.95



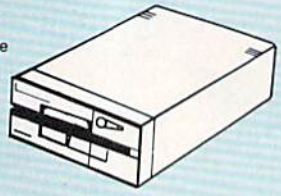
COMMODORE COLT PC

- IBM PC Compatible
- 640K Std.
- Two 5¼ Drives Std.
- Expansion for Hard Drive
- Turbo Processor
- MSDOS + GW Basic Included
- Serial + Parallel Ports
- Mono/RGB Color Card Included

$679.95

Excel FSD-2+ Disk Drive

100% Commodore 64C drive compatible, this Excelerator Plus disk drive is quieter, smarter, faster, and more reliable than the 1541 and 1541C.



$149.95

LASER COMPACT XT

- PC-XT Compatible
- 4.77 - 8.00 Mhz Super Turbo Clock Speed
- Built-in 5¼ Drive
- Built-in RGB Video Output
- Parallel Printer Port
- Serial RS232
- Joystick/Game Port

ONLY **$475.95**

SHARP

FROM SHARP MINDS COME SHARP PRODUCTS ™

PC-4501 Laptop

- 80188 compatible (716 MHz)
- RAM: 256KB
- 3.5" 720KB FDDx1
- Supertwist crystal display
- Lead battery
- AC adapter

$699.95

Color System HEADSTART by Vendex

- Ready to plug in and use immediately
- Ultra fast 8 Mhz Intel 8088-2 Processor
- 512K RAM memory expandable to 768K
- 2-360K disk drives standard
- First complete system with clock calendar and built-in ports for printer, RS232, 2 joysticks, mouse and light pen
- Includes $500 worth FREE software programs
- Hi Res color monitor included!

$969.95

LASER Turbo XT Model II

- Dual Speed 4.77-8 MHz
- 640K Std.
- Built-in ColorCard
- 8 Expansion Slots
- Can Expand to 2 Floppy & 2 Hard Drives
- Green, Amber & Color Monitors Available

$629.95

COMMODORE HARDWARE

64C Computer	$149.95
C128D Computer/Drive	$439.95
1541 II Disk Drive	$179.95
1581 Disk Drive	$189.95
Excel FSD-2+ C64 Drive	$149.95
1802C Monitor	$189.95
1084 Monitor	$279.95
C1351 Mouse	$39.95
1764 RAM C64	$117.95
Colt PC	$679.95

PC COMPATIBLE HARDWARE

Laser Compact XTE 640K	$549.95
Laser Turbo XT Model II	$629.95
Blue Chip Popular	$549.95
Vendex Headstart Color	$969.95
Vendex Headstart Mono	$799.95
Vendex Headstart 888 LTD Color	$1599.95
Sharp PC 4501	$679.95
Sharp PC 4502	$1169.95
Zucker CGA ColorCard	$89.95
BCC CG ColorCard	$94.99
Mitsubishi 310/AT	$1229.95
ATI Graphics Solution	$129.95
ATI EGA Wonder	199.95
ATI VIP	$299.95
Kraft PC Joystick Card	$24.95

Seagate HARD DRIVES

5.25" Half Heights	
ST225 20 meg 65msec MFM	$219.95
ST225N 20 meg SCSI	$289.95
ST238R 30 meg RLL	$229.95
ST251 40 meg 40 msec MFM	$339.95
ST251-1 40 meg 28 msec MFM	$419.95
ST277R 65 meg 40 msec RLL	$379.95
3.5"	
ST125 20 meg 40 msec MFM	$235.95
ST125N 20 meg SCSI	$299.95
ST138R 30 meg RLL	$249.95
ST138N 30 meg SCSI	$329.95
ST157R 49 meg RLL	$399.95
ST157N 48 meg SCSI	$439.95
Seagate Internal Cards	
ST125 20 meg Internal Card	$299.95
ST157R 49 meg Internal Card	$485.95
Controllers	
MFM Controller (XT)	$55.95
RLL Controller (XT)	$64.95

Call for kit pricing and specials.

Ask about our

Seagate Paired Solutions!

1-800-233-8760

Lyco Means Total Service

MAGNAVOX

CM8762

$239.95

- 17% Larger Screen Than Standard 12" Monitors
- RGB TTL (CGA)
- Composite Video Inputs
- 640X 240 Resolution
- Green Text Display Switch
- Audio Input
- Built-in Tilt Stand
- One-Year Limited Warranty

$179.95

CM8502

- Composite Color
- 40 Column Display
- Suggested Use 64C

MAGNAVOX

Attention Educational Institutions

If you are not currently using our educational service program, please call our representatives for details.

Monitors

Thomson:

4120 CGA	$219.95*
GB 100	$119.95*
GB 200 Super Card	$169.95*
GB 300/301	$149.95*

quantities limited

Blue Chip:

BCM 12" Green TTL	$54.95
BCM 12" Amber TTL	$69.95

NEC

Multisync II	$589.95

Magnavox:

BM7652	$79.95
BM7622	$79.95
7BM-613	$79.95
7BM-623	$79.95
CM8502	$179.95
9CM-053	$339.95
CM8762	$239.95
8CM-515	$CALL
9CM-082	$439.95

Okidata

Okimate 20	$129.95
Okimate 20 w/cart	$189.95
120	$189.95
180	$219.95
182	$209.95
182 +	$225.95
183	$239.95
292 w/interface	$449.95
293 w/interface	$585.95
294 w/interface	$799.95
393	$955.95
Laser 6	$CALL
390	$479.95
391	$649.95
320	$345.95
321	$475.95

Toshiba

321SL	$489.95
341 SL	$659.95
351 SX 400 cps	$979.95

Epson

LX800	$184.95
FX850	$339.95
FX1050	$499.95
EX800	$434.95
LQ500	$339.95
GQ3500	$LOW
LQ850	$525.95
LQ1050	$749.95

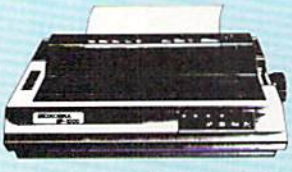
Brother

M1109	$189.95
M1509	$335.95
M1709	$439.95
Twinwriter 6 Dot & Daisy	$899.95
M1724L	$569.95
HR20	$345.95
HR40	$599.95
HR60	$649.95

Citizen

120 D	$144.95
180 D	$159.95
MSP-40	$279.95
MSP-15E	$309.95
MSP-50	$369.95
MSP-45	$349.95
MSP-55	$469.95
Premiere 35	$539.95
Tribute 224	$539.95
Tribute 124	$439.95

Sp180 VC



- 100 Cps Draft
- 24 Cps NLQ
- Tractor & Friction Feed
- Commodore Direct Connect

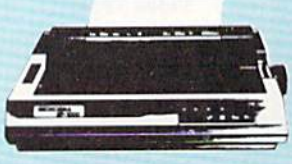
$125.95*

quantities limited

Sp1000VC

- Commodore Direct Connect
- 100 Cps Draft
- 20 Cps NLQ
- Auto Paper Loading
- Tractor & Friction Feed Std.

$159.95



SK3000Ai

- 300 Cps Draft
- 50 Cps NLQ
- Quiet 55 dba
- 7 Colors
- Rear & Bottom Paperpaths

$349.95

SEIKOSHA

SP 180Ai	$125.95*
SP 180VC	$125.95*
SP 1000VC	$139.95
SP 1000AP	$159.95
SP 1200VC	$149.95
SP 1200Ai	$159.95
SP 1200AS RS232	$179.95
SL 80Ai	$329.95
MP5420FA	$999.95
SP Series Ribbon	$7.95
SK3000 Ai	$349.95
SK3005 Ai	$445.95
SPB 10	$CALL
SL 130Ai	$599.95
SP 1600Ai	$CALL

* *Quantities Limited*

Price Guarantee

Since 1981, we have led the industry by continuing to offer the lowest national prices while providing quality service. Many companies have come and gone trying to imitate our quality and service. If by some oversight we do not have the lowest prices advertised on the products you desire, then we would appreciate the opportunity to rectify this oversight.

Turn the page for more great buys!

Lyco Computer

Marketing & Consultants

Since 1981

Air orders processed within 24 hours.

NX1000

*w/cable purchase

- 144 Cps Draft
- 36 Cps NLQ
- EZ Soft Touch Selection
- Paper Parking
- Epson Std. & IBM Proprinter II Compatible

$165.95*

NX15

- Auto Paper Feed
- Tractor Feed Std.
- Draft & NLQ Modes
- Expandable 4K Buffer
- Versatile Wide Carriage

$289.95

NB24-10

$399.95

- Impeccable Letter Quality for Business
- 216 Cps Draft
- 72 Cps Letter Quality
- Tractor Feed Std.
- Auto Paper Feed Feature
- 8K Buffer

star micronics

NX-1000	$169.95*
NX-1000C	$169.95
NX-1000 Color	$225.95
NX-1000C Color	$229.95
NX-15	$289.95
NR-10	$319.95
NR-15	$419.95

NB-15 24 Pin	$669.95
NX-2400	$309.95
NB24-10 24 Pin	$369.95
NB24-15 24 Pin	$545.95
Laser 8	$1759.95
ND-15	$349.95

*w/cable purchase

KXP 1080i

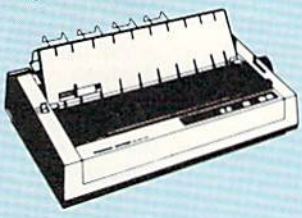
- 150 Cps Draft
- Friction & Tractor Feed Std.
- Bidirectional & Logic Seeking
- NLQ in all Pitches

$159.95

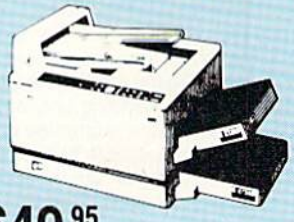
KXP 1595

- 240 Cps Draft
- 51 Cps NLQ
- Auto Paper Loading
- 136 Column for Multi-use Flexibility

$419.95



KXP4450 Laser Partner



$1649.95

- Incredible 11 Pages per Minute
- 2 Lettersize Cassettes Std.
- 300 dpi Resolution
- 5 Printer Emulation Modes
- 512K RAM Std.
- 5000 Page per Month Duty Cycle

1080i Model II	$149.95*
1091i Model II	$179.95
1092i	$309.95
1592	$375.95
1595	$439.95

*quantities limited

3131	$289.95
3151	$CALL
KXP 4450 Laser	$1649.95
1524 24 Pin	$559.95
Fax Partner	$579.95
Optical Scanner	$859.95

Panasonic Office Automation OA

1-800-233-8760

Avatex 1200e | Avatex 1200i | Avatex 1200hc

$65.95

Avatex 1200e

Compare and Save!	Avatex 1200i	*vs.*	Hayes 1200i
Warranty Period	2 Years		2 Years
Software for IBM PC included	YES		YES
Auto-dial	YES		YES
Auto-redial	YES		YES
Auto-answer	YES		YES
Automatically hangs up phone	YES		YES
Complete AT-compatible command set	YES		YES
Speaker volume-software	YES		YES
Price	**$65.95**		**$279.95**

$89.95

Avatex 1200hc

Avatex:

1200e	$65.95
1200i PC Card	$65.95
1200p	$89.95
1200hc Modem	$89.95
2400	$149.95
2400i PC Card	$139.95

Hayes:

Smartmodem 300	$139.95
Smartmodem 1200	$279.95
Smartmodem 2400	$419.95

US Robotics:

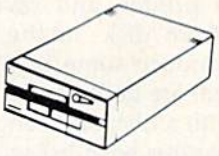
Courier 1200	$169.95
Courier 2400	$299.95

Free Shipping on Prepaid Cash Orders Over $50 in the Continental U.S.

See Page 2 of our 6 Page Ad.

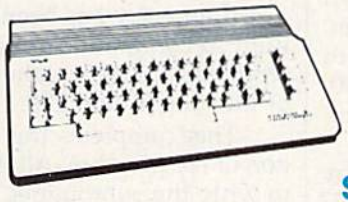
Holiday Starter System

$289.95



Commodore 64C Computer

- 64K RAM
- Serial Port
- Expansion Port
- Two Joystick/ Paddle Ports
- Video Port
- RF TV Port
- Built-in Basic 2.0



SKC 10 Diskettes

500XJ Joystick

Excel FSD-2 + Disk Drive

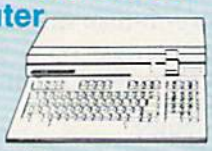
- 100% Commodore 64C Drive Compatible

Smarter, faster, and more reliable than the 1541 and 1541C.

Holiday Word Processing System

$799.95*

Commodore C128D Computer

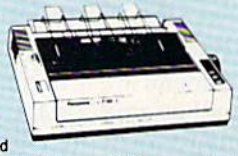


- 128K Std.
- 3 Mode Operation — 1-64: Runs 64 Software 2-C 128: Faster, More Mercury for Increased Productivity 3-CPM: Uses Standard cpm Titles

Magnavox 8762

- 17% Larger Screen Than Standard 12" Monitors
- RGB TTL (CGA)
- Composite Video Inputs
- 640X 240 Resolution
- Green Text Display Switch
- Audio Input
- One-Year Limited Warranty

Seikosha 180VC



- 100 cps Draft
- 24 cps NLQ
- Tractor & Friction Feed
- Commodore Direct Connect

*Software not included.

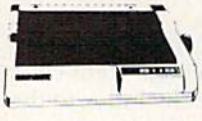
Holiday PC Super Value

$889.95

Blue Chip Green TTL Monitor

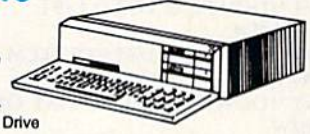
- 720 x 348 in Graphics Mode
- Separate TTL Signal
- Non-glare "Flicker Free" Tube

Star NX 1000 Printer



- 144 cps Draft
- 36 cps NLQ
- EZ Soft Touch Selection
- Paper Parking
- Epson Std. & IBM Proprinter II Compatible

Commodore Colt PC



- IBM PC Compatible
- 640K Standard
- Two 5¼ Drives Std.
- Expansion for Hard Drive
- Turbo Processor
- MSDOS & GW Basic Included

Why shop at Lyco Computer?

Lyco Computer is one of, if not the largest, and most established firms to provide only quality name brand computer products at prices 30% to 50% below retail. We've set many industry standards, and we are setting the pace for many more in the future. Our standards include: a separate department for customer service; a price guarantee; guaranteed factory fresh merchandise; diverse payment and shipping policies, including a C.O.D. policy which allows customers to have products in their hands before paying anything. Selection places Lyco at the forefront of the industry. Due to our in-stock volume, we cannot advertise all of our products. If you do not see the product you want advertised, call Lyco Marketing toll free.

How do I know I will get the product I need?

Our marketing staff is well-educated in the computer industry. They receive continuous formal training by our manufacturers which enables them to develop and maintain a high degree of expertise on the products they represent. Though our strict guarantee on providing only new merchandise prohibits free trial periods and a guarantee on compatibility, a wealth of knowledge is available to our customers to help with the purchasing decision. As thousands of people every week capitalize on our savings and services, we hope you too, will make Lyco Computer your first choice.

What about warranty or service?

We decided several years ago that a Customer Service Department was needed in the industry. Unfortunately, few of our competitors offer this service. Our Customer Service Department is available at **(717) 494-1670** to provide assistance in all warranty matters. Our product line enjoys "name brand recognition," and we back all of our manufacturer's stated warranty terms. Many manufacturers will allow defective products to be exchanged. Before returning any item that appears to be defective, we ask that you call our Customer Service Department to assist you in determining if the product is defective. If the product is determined defective, they will give you a special authorization number and speed processing of your order.

Will you rush an item to me?

Since 1981, we have set the standard in the industry by processing orders within 24 hours — not 4 to 6 weeks. We offer next day air, two day air, standard UPS, and postal international shipping services. Our records show we fill 95% of our orders daily. Temporary shortages are normally filled within 10 days. If an order cannot be filled within 60 days, we refund your money in full, unless you choose to wait for the order and benefit from the price savings. Any time prior to shipment, you may cancel or change the out of stock product by contacting our Customer Service representatives.

How do I order?

Send your order to Lyco Computer, P.O. Box 5088, Jersey Shore, PA, 17740. Or, call either Marketing at **1-800-233-8760** or Sales at **(717) 494-1030**. We provide four payment methods. We have always accepted C.O.D. orders through UPS. Prepaid orders over $50 are shipped freight-free. For orders under $50, please add $3 for freight. Orders prepaid by a certified check or money order are shipped immediately. Personal and company checks require a 4 week waiting period prior to shipping. Visa and Master Card orders are accepted for your convenience, but we cannot pass along the 4% discount offered for cash. Purchase orders are accepted from Educational Institutions. We only charge sales tax on items delivered in Pennsylvania. For APO, FPO, and international orders, please add $5 plus 3% for priority mail. Advertised prices and availability are subject to change.

Call Marketing: 1-800-233-8760
Or Sales: 717-494-1030
Hours: Monday through Friday, 9:00 a.m. to 9:00 p.m.
Saturday, 10:00 a.m. to 6:00 p.m.
Call Customer Service: 717-494-1670
Hours: Monday through Friday, 9:00 a.m. to 5:00 p.m.

Access:
Echelon .....
Mach 128 ..
Wld. Cl. Lea
Famous Cou
1 or 2 .....
Action Soft
Up Periscop
Thundercho
Activision:
Last Ninja ..
Might & Mag
Crossbow ..
Maniac Man
Beyond Zork
Batteries In
Paperclip III
Berkeley So
Geofile 64 ..
Geos 64 .....
Geos 128 ...
Geowrite 12
Berkeley Tril
Broderbund
Bank St. Wri
Print Shop .
Print Shop C
Graphic Lib.
Cauldron ....
Electronic A
Bard's Tale
Hunt for Red
Monopoly ....
Strike Fleet
Wasteland ..
Epyx:
Fastload .....
California Ga
4x4 Off Roa
Metrocross ..
The Games:
Winter Editio

1000 Sheet
1000 Mailing
200 Sheet O
Banner Pape
200 Sheet L

Xetec Jr. .....
Xetec Super
Xetec Gold
PPI .....
Cardco GWI
Cardco Supe
MW 350 .....

We carry
printer appl
popula

3.5
Maxell:
SSDD .....
DSDD .....
Bonus:
SSDD .....
DSDD .....
Verbatim:
SSDD .....
DSDD .....

Free shippi

SOFTWARE

MMODORE

... $25.95
... $28.95
er Bd. ... $22.95
ses
... ea. $11.95
... $18.95
ber ... $18.95
... $19.95
... $22.95
... $19.95
ion ... $19.95
... $25.95
luded:
... $31.95
tworks:
... $29.95
... $35.95
... $39.95
... $39.95
ak ... $29.95
er ... $29.95
... $26.95
mpan. ... $20.95
1,2,3 .. ea. $14.95
... $9.95
rts:
... $25.95
October .. $25.95
... $20.95
... $20.95
... $25.95
... $22.95
nes ... $22.95
Racing .. $22.95
... $13.95
... $22.95

COMMODORE

Firebird:
Jinxter ... $19.95
Starglider ... $11.95

Microleague:
Microleag. Baseball ... $22.95
Microleag. Wrestling ... $16.95

Microprose:
Airborne Ranger ... $22.95
Gunship ... $19.95
F-15 Strike Eagle ... $19.95
Pirates ... $22.95
Stealth Fighter ... $22.95

Mindscape:
Blockbuster ... $16.95
Harrier Combat Simulator ... $16.95
Paperboy ... $19.95
Road Runner ... $19.95

Origin:
Autoduel ... $23.95
Ultima IV ... $34.95

Software Simulations:
College Basketball ... $22.95
Football ... $17.95

Springboard:
Newsroom ... $19.95
Certificate Maker ... $14.95

Strategic Simulations:
Phantasie III ... $25.95
Eternal Dagger ... $25.95
Questron II ... $25.95

Sublogic:
Flight Simulator II ... $30.95
Stealth Mission ... $30.95

Timeworks:
Swiftcalc 128 ... $27.95
Wordwriter 3 ... $22.95

Unison World:
Art Gallery 1 or 2 .. ea. $14.95
Print Master ... $17.95

AMIGA

Activision:
Fairy Tale Adventure ... $27.95
Romantic Encounters .. $22.95

Electronic Arts:
FA/18 Interceptor ... $33.95
Ferrari Formula One ... $33.95
World Tour Golf ... $24.95

Epyx:
Destroyer ... $22.95
Sub Battle Simulator ... $27.95
Impossible Mission 2 ... $28.95

Microprose:
Silent Service ... $22.95

Mindscape:
Balance of Power ... $27.95
Harrier Combat Simulator ... $27.95

Origin:
Moebius ... $23.95
Ogre ... $18.95

Strategic Simulations:
Gettysburg ... $35.95
Kampfgruppe ... $35.95
Phantasie III ... $25.95

Sublogic:
Flight Simulator ... $31.49
Jet Simulator ... $31.49
Scenery Disk ... $CALL

Unison World:
Print Master ... $25.95
Art Gallery 1 or 2 .. ea. $14.95
Fonts & Borders ... $17.95

FREE Special Edition Graphics Library With Print Shop

IBM

Access:
Wld. Cl. Value Pack ... $9.95
10th Frame ... $27.95

Activision:
Beyond Zork ... $27.95
GBA Basketball ... $9.95
Last Ninja ... $24.95
Might & Magic ... $27.95

Broderbund:
Ancient Art of War ... $26.95
Print Shop ... $34.95
Print Shop Comp. ... $29.95
Carmen San Diego Europe ... $27.95

Electronic Arts:
Yeager's AFT ... $26.95
Weaver Baseball ... $26.95
Hunt for Red October .. $31.95
Pegasus ... $26.95
Skyfox II ... $18.95
Starflight ... $31.95
Alternate Reality-City .. $25.95

Epyx:
California Games ... $22.95
L.A. Crackdown ... $28.95
Home Video Producer . $28.95
Print Magic ... $32.95
Impossible Mission 2 ... $22.95
Str. Sport Baseball ... $11.95
Str. Sport Soccer ... $11.95
Spider Bot ... $13.95

Firebird:
Jinxter ... $22.95
Universal Military Simulator ... $28.95

Microleague:
Microleag. Baseball ... $22.95
GM Disk ... $16.95
Stat Disk ... $13.95

Microprose:
Confliction Vietnam ... $22.95
F-15 Strike Eagle ... $22.95

IBM

Silent Service ... $22.95
Gunship ... $27.95
Pirates ... $22.95

Mindscape:
Blockbuster ... $20.95
Gauntlet ... $22.95
Harrier Combat Simulator ... $20.95
Indoor Sports ... $16.95
Paperboy ... $22.95
Willow ... $22.95
Uninvited ... $22.95

Origin:
Ultima III ... $23.95
Ultima IV ... $34.95
Moebius ... $23.95

Strategic Simulations:
Gettysburg ... $35.95
Phantasie III ... $25.95
Questron II ... $25.95
Stellar Crusade ... $31.95
Star Command ... $31.95
Wargame Constr. ... $23.95

Sublogic:
Flight Simulator ... $34.95
Jet Simulator ... $30.95
Western Europe Scenery Disk ... $14.95

Timeworks:
Wordwriter PC ... $27.95
PC Quintet ... $49.95
Partner PC ... $22.95
Swiftcalc PC ... $22.95

Unison World:
Newsmaster II ... $39.95
Print Master ... $29.95
Art Gallery 1 or 2 .. ea. $14.95
Fonts & Borders ... $17.95

inter aper

aser ... $16.95
Labels ... $8.95
KI 20 ... $8.95
45' Roll . $10.95
ser ... $6.95

inter rfaces

... $35.95
raphics ... $55.95
... $74.95
... $29.95
z ... $32.95
G ... $44.95
... $49.95

ables for most cations for many computers.

Surge Suppressors

PP102-6 Outlet ... $16.95
PP106-6 Outlet With EMI/RFI ... $28.95
PP104-6 Outlet With Indicator ... $19.95
PP101-6 Outlet Powerstrip ... $9.95
Modem Protector ... $10.95

Printer Ribbons

Save up to 50%! We carry a stock of thousands for most applications.

Switch Boxes

Cent '25' AB ... $39.95
Cent '36' AB ... $39.95
RS232 ABC ... $45.95
Cent ABC ... $49.95
RS232 ABCD ... $49.95
Cent ABCD ... $49.95

DEALER INQUIRIES WELCOME, CALL TOLL FREE

Drive Maintenance

5¼ Drive Cleaner ... $7.95
3.5 Drive Cleaner ... $10.95

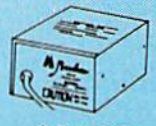
Video Tape

SKC T120 VHS Video Tape:

Each ... $3.99
3 Pack ... $10.95
10 Pack ... $35.95

C64 Power Supply

Micro R + D MW 701A



$34.95

1-Year Warranty

Disc Storage

QVS-10 5¼ ... $3.95
QVS-75 5¼ ... $10.95
QVS-40 3½ ... $9.95

Diskettes

... $11.50
... $17.95
... $10.95
... $13.95
... $12.95
... $18.95

SKC:
SSDD ... $9.95
DSDD ... $13.99

5¼
Disk Notcher ... $5.95

Maxell:
SSDD ... $7.95
DSDD ... $8.95

Bonus:
SSDD ... $5.95
DSDD ... $6.95

SKC:
DSDD ... $6.95
DSHD ... $13.95

Generic:
DSDD ... $4.95

Verbatim:
SSDD ... $8.99
DSDD ... $11.50

Joysticks

Tac 3 ... $9.95
Tac 2 ... $10.95
Tac 5 ... $12.95
Tac 1 & IBM/AP ... $26.95
Slik Stick ... $6.95
Black Max ... $10.95
Boss ... $11.99
3-Way ... $19.99
Bathandle ... $16.75

Winner 909 ... $24.95
Wico IBM/AP ... $29.95
Lipstick Plus ... $14.95
Kraft KC III AP/PC ... $16.95
Kraft PC Joystick Card ... $27.95
Kraft Maze Master ... $8.95
I Controller ... $13.95
Epyx 500 XJ ... $13.95

ng on Prepaid cash orders over $ 50 in the Continental U.S.

BASIC for beginners

Wish List

Larry Cotton

Happy Holidays. This month we'll write a short seasonal program that will give us the opportunity to learn several new BASIC statements. The program creates a Christmas wish list which can be added to, deleted from, printed onto the screen, printed on a printer, and saved to or loaded from disk. In the process, we'll introduce some BASIC statements that are necessary to communicate with a disk drive and printer.

Since our wish list will be primarily a list of words, it can be stored in the computer, saved to disk, and printed on the printer in the form of a string array. Let's just call it I$(C)—*I* for *Item* and *C* for *Counter*.

Unless you are particularly greedy, 100 items should suffice. The first step is to dimension the array:

```
100 DIM I$(100)
```

Now let's set up the screen. Leave the background color blue, but change the border and characters to white. We'll do this on the Commodore 64 with POKE statements:

```
110 POKE 53280,1: POKE 646,1
```

Next, a menu with numbered options would be appropriate. (Another common way to offer choices is to ask for the first letter of the choices to be typed, but, as you will see, the numbered-option method is quite easy and efficient.)

```
120 PRINT"{CLR}{3 DOWN} 1. ADD
    ITEM(S) TO LIST
130 PRINT"{DOWN} 2. SAVE LIST TO
    DISK
140 PRINT"{DOWN} 3. LOAD LIST
    FROM DISK
150 PRINT"{DOWN} 4. DELETE ITEM
    FROM LIST
160 PRINT"{DOWN} 5. SHOW LIST ON
    SCREEN
170 PRINT"{DOWN} 6. PRINT LIST
180 PRINT"{DOWN} 7. QUIT
```

We must get the computer to wait for the user to type something:

```
190 GETA$:IFA$=""THEN190
```

Now we want the computer to take action if any of the keys 1–7 is pressed. We could use several IF-THEN statements, but we'll use ON-GOSUB here because it's more efficient:

```
200 ONVAL(A$)GOSUB220,270,330,380,
    450,500,530
```

We will make each of the menu options access one of seven subroutines corresponding to the number pressed. Since I've already written and renumbered this program, I know what each subroutine's target line is. When you write your own programs, give yourself some room. Start numbering subroutines with higher round numbers, such as 500, 1000, and 2000; then, if you want, you can renumber the program.

What if the user types an entry other than one from the range 1–7? Since ON will respond only to numbers that correspond to the position of the line numbers after GOSUB, there's an easy way to make sure the program doesn't accept any other keypresses—send control back to print the menu:

```
210 GOTO120
```

What Do You Want?

Our main information-gathering loop is in lines 220–260. As each item is input, the program loops until RETURN is pressed with no entry:

```
220 PRINT"{CLR}"
230 C=C+1:PRINT"{3 DOWN} ITEM
    NO.";C"{LEFT}";
240 INPUTI$(C)
250 IFI$(C)=""THENC=C-
    1:GOSUB450:RETURN
260 GOTO220
```

Line 220 clears the screen. Line 230 introduces our item counter C, which will be the index to the array I$(C). The counter begins as 0, but now needs to be incremented before we get the user's input. We print our question and, by carefully positioning the cursor, cause the question mark in line 240's INPUT statement to be printed right after the words. You may want to remember this technique; it's very common and very useful.

We must provide a way for the user to escape from the INPUT loop. When the RETURN key is pressed with no entry, I$(C) is set to a null string. Line 250 decrements the counter (it was incremented in line 230), sends control to another subroutine at line 450, which will list the items on the screen, and then returns control to print the menu again.

If an entry has been made, we want to continue looping; line 260 sends control back to the beginning of the loop at line 220.

This completes the main portion of the program. All that's left is to write the subroutines for saving and loading our wish list, deleting items, and printing the list onscreen and to the printer.

Saving Subroutine

Here's the save-to-disk subroutine:

```
270 IFC=0THENRETURN
280 L="":INPUT"{DOWN} NAME OF
    LIST TO SAVE";L$:IFL$=
    ""THENRETURN
290 OPEN1,8,1,L$
300 PRINT#1,C
310 FORT=1TOC:PRINT#1,I$(T):NEXT
320 CLOSE1:RETURN
```

We want to save to the disk the items that are stored in the I$(C) array. Lines 270 and 280 should look familiar. First we check the counter to see if any entries have been made. If the counter is 0, the subroutine ends with a RETURN to line 210—the line immediately following the GOSUBs.

If entries have been made (the variable C isn't 0), line 280 first sets L$ to an empty string and then asks the user to input the list's name. If he or she just presses the RETURN key, the subroutine ends without a filename being entered. Again, the program returns to line 210.

Let's say the user types WISH

LIST 1 and presses RETURN at line 280's INPUT. L$ becomes the string "WISH LIST 1"

Now it's time to send the file named WISH LIST 1 to the disk drive. When you communicate with peripheral equipment, such as disk drives and printers, you need to open and close channels. And, like the computer itself, the peripherals expect the communications to be in a syntax they recognize.

The OPEN command opens the channel for communication. The first 1 in the command is a file number. (Think of opening a Manila file folder with a particular number on it.) Once that file is opened, data can be sent to it by referring to its number. You can assign the file any number from 1 to 127.

The number 8 makes sure the information is sent to the disk drive. (If you have a second drive, refer to it as device 9.)

The next parameter, 1 in this program, tells the disk drive to save the information. L$ is the name of the file.

So far, we haven't actually sent any data; we've only told the disk drive to get ready to receive it. Next we use another BASIC statement, PRINT#, which sends information to the disk drive. PRINT#'s effect is similar to PRINT's, except that instead of information being printed to the screen, it's being printed to the disk.

The first piece of information we need to send to the disk is the number of items in the wish list—the value of the counter C. Line 300 does this. Then line 310 uses a FOR-NEXT loop to send the array I$(C) to the disk.

All the necessary information has been sent to the disk. We must now close our file (CLOSE1) and end the subroutine (RETURN) in line 320.

Other Subroutines

We're running out of space for this month, so I'll show you the rest of the program and explain it in detail next month. That way you'll be able to present a nice, neat list to Santa. Here's the loading subroutine:

```
330 L$="":INPUT"{DOWN} NAME OF
    LIST TO LOAD";L$:IFL$=
    ""THENRETURN
340 OPEN1,8,0,L$
350 INPUT#1,C:IFC=0THENPRINT
    "{DOWN} NO LIST
    FOUND.":GOTO370
360 FORT=1TOC:INPUT#1,I$(T):NEXT
370 CLOSE1:GOSUB450:RETURN
```

Here's the item-deleting subroutine, which uses a new function—CHR$( ):

```
380 IFC=0THENRETURN
390 FORT=1TOC:PRINT"{CLR}{2
    DOWN}":PRINTT;I$(T)
400 PRINT"{DOWN} PRESS RETURN
    TO CONTINUE OR
410 PRINT"{DOWN} SPACE BAR TO
    DELETE ITEM
420 GETA$:IFA$<>CHR$(13)THENIFA$
    <>" "THEN420
430 IFA$=CHR$(13)THENNEXT:
    RETURN
440 FORZ=TTOC:I$(Z)=I$
    (Z+1):NEXT:C=C-1
```

The subroutine for printing your wish list on the screen is as follows:

```
450 IFC=0THENRETURN
460 PRINT"{CLR}":FORT=1TOC:
    PRINTT;I$(T):NEXT
470 PRINT"{DOWN} PRESS ANY KEY
    FOR MENU.
480 GETA$:IFA$=""THEN480
490 RETURN
```

Here's another subroutine which communicates with a peripheral, your printer:

```
500 IFC=0THENRETURN
510 PRINT"{DOWN} PRINTING . . .
520 OPEN4,4:FORT=1TOC:PRINT#4,I$
    (T):NEXT:PRINT#4:CLOSE4:
    RETURN
```

If you don't have a printer, use these lines:

```
500 PRINT"{DOWN} NO PRINTER
    HERE":PRINT"{DOWN} PRESS
    ANY KEY TO CONTINUE . . .
510 GETA$:IFA$=""THEN520
520 RETURN
```

The last lines contain the subroutine to quit the program:

```
530 PRINT"{DOWN} ARE YOU SURE?
540 GETA$:IFA$=""THEN540
550 IFA$="Y"THENEND
560 RETURN
```

Next month we'll have more on communicating with peripherals.

ATTENTION AMIGA USER GROUPS!

COMPUTE! Publications is interested in compiling a list of Amiga user groups. If your group supports Amiga computers, please send the group's name, address, and name of the group contact person to

COMPUTE! Publications
P.O. Box 5406
Greensboro, NC 27403
Attn: Amiga User Groups

COMPUTE! Publications

Back Issues/ Disk Orders

Individual back copies of *magazines* and *disks* are available by mail only while quantities last.

Please clip or photocopy, and mail completed coupon and check to:

COMPUTE! Publications
Single-Copy Sales
P.O. Box 5188
Greensboro, NC 27403

Name: _____

Street: _____

City: _____

State: _____ Zip: _____

Type of computer: _____

Quantity	Issue (Month/Year)	Magazine or Disk Name	Price*
		SUBTOTAL:	
		NY residents—Add 8¼% Tax:	
		NC residents—Add 5% Tax:	
		TOTAL:	

* Back issues of *COMPUTE!*, *COMPUTE!'s Gazette*, and *Apple Applications* are $6.00 each. The following issues are **NOT** available: ***COMPUTE:*** 1/81–3/81, 9/81, 11/81, 2/82–12/82, 2/83, 4/83, 1/85. ***Gazette:*** 7-83–12-83, 1/84–7/84, 9/84, 11/14–12/84, 1/85–7/85, 9/85–11/85. ***Apple Applications:*** 6/88.

* Single disks for *COMPUTE!*, *Gazette*, or *Apple Applications* are $15.00. NOTE: No disks dated prior to January 1986 are available.

* Back issues of *COMPUTE!'s PC Magazine* are $16.00 each and back issues of *Atari ST Disk & Magazine* are $8.00 each. (These publications are available only as magazine/disk combinations.) The following issues are **NOT** available: ***PC Magazine:*** 9/87, 11/87. ***Atari ST Disk & Magazine:*** 10/86.

* Disk/magazine combinations are $16.00.

Shipping and handling included.
NO CREDIT-CARD ORDERS ACCEPTED.
Payment must be in U.S. dollars by check drawn on U.S. bank.

271

ADVERTISEMENT

Flight notes # 2E

Wrapping Up Europe - The deadline for entering our "Find Red Square" contest was November 15th, 1988. Current plans (subject to change) call for a mid-December drawing to determine the contest winner. This contest, requiring you to use **Flight Simulator** or **Jet** to locate Red Square on our new **"Western European Tour" Scenery Disk**, was as much fun for us as it was for you! Watch for our next Scenery Disk promo contest coming early next year.

The success of **Stealth Mission** has really surprised us. In an increasingly cost-conscious consumer market, our engineering staff decided to hang the expense and create the ultimate simulation in terms of program polish and strategic depth. One example of their attention to detail is the way in which enemy sensing range varies depending on your aircraft type. Your ability to choose between flying an F-19 Stealth fighter, the experimental forward-swept wing X-29, or a Navy F-14 Tomcat provides a first-hand perspective on the way mission challenges can vary depending on your stealth capabilities.

Stealth Mission's polish is like nothing you've ever experienced before. One much-appreciated new feature is the ability to pause aircraft motion while you adjust your strategies (such as weapon/target selection) or system settings. For fumble-fingered computer pilots like myself, this feature lets me concentrate more on my strategies rather than on perfecting my sensory-motor skills. Autopilot landing and airborne refueling systems eliminate much of the difficulties and frustrations of flying. Stealth Mission is unlike any other simulation I've ever flown. Enjoy!

Its Back! Not available since early 1984, the classic **Night Mission Pinball** will be back on store shelves once again by the time you read this. Priced at only $29.95, now everyone can afford to add this classic to their software collection. Look for the box labelled "WARNING! Use of this product may be addicting!" We recommend that you take this warning seriously.

SubLOGIC Corporation
501 Kenyon Road
Champaign, IL 61820
TELEPHONE: (217) 359-8482
ORDER LINE: (800) 637-4983

Please address any feedback/correspondence regarding SubLOGIC products, operations, or this "Flight Notes" column to ATTN: Chairman's Office.

power BASIC Program Merge

Randy Thompson

Merge BASIC programs with this short, fast routine for the 64. Disk drive required.

"Program Merge" adds a feature that every BASIC programmer can use—the ability to merge BASIC programs. It's small, fast, and completely relocatable, so it won't interfere with other programming utilities.

Getting Started

Program Merge is written in machine language, but it's listed here as a BASIC loader. Using "The Automatic Proofreader," found elsewhere in this issue, type in the program and save a copy to disk.

By default, the machine language routine is stored in memory at 49152 ($C000). If you like, you can change the starting address to another location simply by changing the value of the variable SA in line 30.

Run the program. Program Merge prints the message PROGRAM MERGE INSTALLED AT *xxxxx*, where *xxxxx* is the starting address for the program. If you've made an error in your typing, you'll see the message ERROR IN DATA STATEMENTS.

Program Merge merges a program in memory with one on disk. Use the following syntax to merge a program on disk with one in memory:

SYS 49152,"*filename*",*drive#*

where *filename* is the name of the program to be merged and *drive#* is the device number of the drive in which the program is located. If you change the program's starting address, be sure to change the SYS address as well. If both programs contain identically numbered lines, the line on disk takes precedence—it is the one which will be placed in the resulting program.

How It Works

When a program is entered from the keyboard, typed characters are stored into an input buffer. When the RETURN key is pressed, the BASIC interpreter abbreviates the line into BASIC tokens, searches through program memory for the new line's proper location, and inserts it into the program. Program Merge does essentially the same thing. Each program line is read from disk into the input buffer. But since the line is already tokenized, Program Merge simply has to find the right place in memory and insert the line.

The key to making this routine work lies in changing two of the 64's vectors. One of these is the IMAIN vector, located at 770–771 ($302–$303). Every time a program line is entered, the computer jumps through this vector to enter immediate mode. Because merging program files requires inserting more than one line at a time, Program Merge redirects this vector to point to our merge routine.

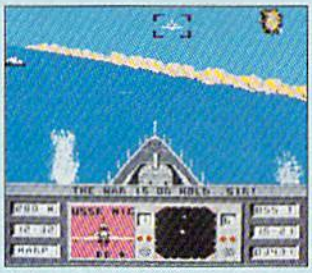
The second vector that has to be changed is the ICLALL vector located at 812–813 ($32C–$32D). Whenever a line is inserted into a program, a CLR command is executed—closing all open files via the ICLALL vector. Program Merge needs to keep the program file being merged open, so the merge program changes this vector to keep the file open. Both of these vectors are restored to their original values when the merge is finished.

See program listing on page 89.

Gazette Disk Orders
One-year Subscriptions: $69.95
Call **1-800-727-6937**
(In Iowa: 1-800-532-1271)

HELL ON WATER

OCEAN RANGER



You're loaded for bear and taking no prisoners, *with Sea Sparrow and Harpoon missiles, 76mm cannon, depth charges, infrared chaff, and ECM radar jammer.*

In the Briefing Room, *you learn that somebody's messing with Uncle Sam again. Get your orders, outfit your ship, assign your crew, and head for the action.*

Full aerial map shows the theater of operations, *while dual radar screens monitor close-in combat maneuvers and long-range strategic movements.*

PROCEED IMMEDIATELY TO MILITARY HOT-SPOTS FOR NONSTOP GUNSHIP ACTION. YOU COMMAND THE FASTEST ATTACK MISSILECRAFT ON THE HIGH SEAS TODAY.

YOUR ORDERS: REPEL SOVIET INTRUDERS IN THE BERING SEA. PUNISH DICTATORS AND DRUG SMUGGLERS IN CENTRAL AMERICA. SECURE VULNERABLE TARGETS IN SOUTH-EAST ASIA. LEAD RETALIATORY STRIKES IN THE PERSIAN GULF.

THIS IS NOT AN EXERCISE. REPEAT THIS IS NOT AN EXERCISE. THIS IS WAR AT SEA.

KICK BUTT OR SWIM FOR SHORE.

FOR COMMODORE™ 64/128 COMPUTERS.

SEE YOUR LOCAL RETAILER OR CALL 1-800-227-6900, TO ORDER DIRECT.

ACTIVISION®

© 1988 ACTIVISION. *Ocean Ranger* is a trademark of ACTIVISION. Commodore is a trademark of Commodore Electronics, Ltd.

Contest Winners!

COMPUTE!'s Gazette and Berkeley Softworks would like to thank the many programmers who entered our joint programming contest, advertised in the spring and summer issues of *GAZETTE*.

The contest was a huge success. More than $25,000 in cash and prizes will be awarded to the winners, listed here. Congratulations to all of them.

Our eight First Prize winners each get $1,000 in cash, a complete library of GEOS application programs, plus a Commodore 1670 Modem, 1351 Mouse, and a RAM expansion module. First Prize winners also receive a six-month subscription to Q-Link and a 12-month subscription to *COMPUTE!'s Gazette*. Second and Third Prize winners will receive many of the same prizes (minus the First Prize cash award).

The *GAZETTE* staff chose the winners of the contest. We've handed the entries over to Berkeley, who will put the cream of the crop onto a special shareware disk. We'll keep you posted.

ENTERTAINMENT

	Application	Desk Accessory
1st	GeoWar *Lysle Shields*	GeoSliders *Lester Gock*
2nd	Cluster Wars *Francis Kostella*	(No Entry)
3rd	Ultimate Stage *Roger Pingleton*	(No Entry)

EDUCATION

	Application	Desk Accessory
1st	Music Box *Obbie Zendik*	StatesNCaps *David Hall*
2nd	Bingo *Robert Rosenbaum*	(No Entry)
3rd	(No Entry)	(No Entry)

PRODUCTIVITY

	Application	Desk Accessory
1st	Dialog Box Editor *Stephen Van Egmond*	Text Print *Terry Van Camp*
2nd	GeoGraph *Ernest Hunter*	Get Directory *Nicholas Vrtis*
3rd	(No Entry)	(No Entry)

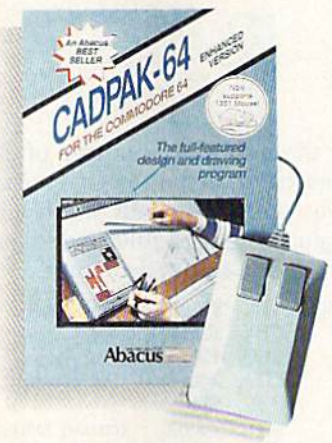
OPEN PROGRAMMING

	Application	Desk Accessory
1st	LaserMatrix *William Prendergast*	Fill Pattern Editor *Jason Clark*
2nd	Font Editor *Jim Collette*	Analog Clock *Charles Bozarth*
3rd	Icon Editor *Bill Helfinstine*	Analog Clock *Douglas Curtis*

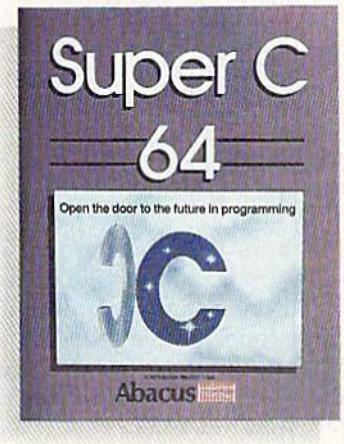
Get Results

with proven software and books from Abacus.

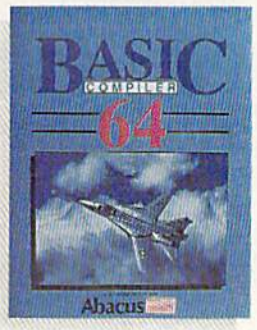
Super Pascal—Get the fastest and complete Pascal for your computer. **Super Pascal** is a full implementation of standard Pascal. Extensive editor features search, replace, etc. Even add machine language routines with the built-in assembler. Fast graphics library. C-64 version has high-speed DOS for faster access. More than just a compiler–**Super Pascal** is a complete system that gives you programming results.
C-64 $59.95 C-128 $59.95



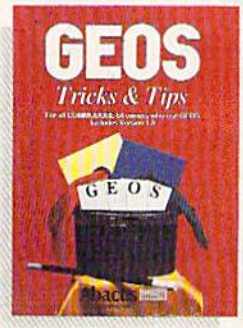
Cadpak—The professional design tool. Enter simple or intricate drawings with the keyboard, lightpen or 1531 mouse. With the flexible object editor you can create libraries of furniture, electronics, etc. as intricate as screen resolution permits. Zoom in to do detailed work. Produce exact scaled output to most printers in inches, feet, etc. Get design results fast with **Cadpak** and your Commodore® computer.
C-64 $39.95 C-128 $59.95



Super C—You can now develop software or just learn C on your computer. Easy-to-use and takes full advantage of this versatile language. Produces 6502 machine code and is many times faster than BASIC. Includes full-screen editor (search, replace and block operations), compiler, linker and handbook. Libraries for graphics and advanced math are included. Whether you want to learn C, or program in a serious C environment for your Commodore, **Super C** is the one to buy.
C-64 $59.95 C-128 $59.95



BASIC Compiler—Now anyone can make their BASIC programs run faster! Easily converts your programs into fast machine language or speed code. Even speed up programs written in Simon's Basic, Video Basic etc. If your program walks or crawls, give it speed to RUN!
C64 $39.95 C128 $59.95



GEOS™ Tricks & Tips—A new book with something for everyone. Contains over 50 tricks and tips that you can use everyday. Converts any word processor file into geoWrite format; edit existing GEOS fonts or create your own; Write in machine language or explore the internals of GEOS. **$16.95**

TextPro Amiga is a full-function word processing package. Easy-to-use, fast and powerful—with a suprising number of extras. $79.95

BeckerText Amiga is the professional word processor. WYSIWYG formatting. Automatic creation of table of contents and index. Expandable spelling checker. Merge graphics into text. Much more. $150.00

DataRetrieve Amiga is the powerful, and easy-to-use database. Sets up in minutes. Password security. Large capacity. Performs complex searches. Very flexible. $79.95

AssemPro Amiga unlocks the full power of the Amiga's 68000 processor. Integrated Editor, Debugger, Disassembler and Reassembler. Cross-reference list. Conditional assembly. $99.95

Call (616) 698-0330 or write for your free Amiga software and book catalog. More software and books coming soon!

Please note our new address and phone numbers

Abacus

Dept. RB • 5370 52nd Street SE • Grand Rapids, MI 49508
Phone 616/698-0330 • Telex 709-101 • Telefax 616/698-0325

Call or write today for your **free** catalog or the name of your nearest dealer. Or you can order direct using your Visa, American Express or MasterCard. Add $4.00 per order for shipping and handling. Foreign orders add $12.00 per item. 30-day money back guarantee on software. Dealer inquiries welcome—over 2400 dealers nationwide.

Commodore is a registered trademark of Commodore Electronics Ltd.
Amiga is a registered trademark of Commodore-Amiga, Inc.
GEOS is a trademark of Berkeley Softworks.

machine language programming

Dressing Up GETIN

Jim Butterfield
Contributing Editor

Machine language programmers often prefer to use GETIN ($FFE4) for keyboard input, rather than the more sophisticated INPUT ($FFCF). With GETIN, they retain control of the system. Their programs can reject unwanted characters, check to see how long the user takes to type a character, or take action without the need for RETURN to be pressed.

But there are problems with using GETIN. Characters typed on the keyboard do not show on the screen (unless the program writes them there directly). The cursor doesn't blink, so it's not clear that the program requires input. If editing features are desired, the program has to do the work.

This month, we'll write a simple program which uses GETIN. It displays a prompt character and honors the delete key.

The program as given here allows only characters of the alphabet to be typed. No spaces, no numbers, no punctuation are allowed. It also limits the total number of characters that can be typed (the value is assumed to be stored at $20FF before the program begins).

The location of this program, $2000 (or decimal 8192), is not ideal for general programming. I chose it so that it can be used on all Commodore 8-bit machines. Let's look at the code.

Register X and address $2100 log the number of characters received on the input line. We start at 0, of course.

```
2000  LDX  #$00
```

Here's where we print the prompt. I've picked ASCII character 164, the underline character. We print a backspace character immediately following the underline, so that the cursor will be in the right place. I've decided not to print the prompt if the maximum number of characters have already been entered. So we compare X with the fixed limit value stored at $20FF and skip ahead if we don't want a prompt.

```
2002  STX  $2100
      CPX  $20FF
      BEQ  $2014
      LDA  #$A4     (the prompt)
      JSR  $FFD2
      LDA  #$9D     (cursor left)
      JSR  $FFD2
```

Now we get a character from the keyboard. We must restore the value of X, which might have been lost during the GETIN call.

```
2014  JSR  $FFE4
      LDX  $2100
```

If we haven't received any characters (that is, the register X equals 0), we won't honor the delete or return keys; instead we'll skip ahead to the character test.

The loop terminates if the return key is pressed.

```
      BEQ  $202A
      CMP  #$0D     (RETURN?)
      BEQ  $2040
      CMP  #$14     (INST/DEL)
      BNE  $202A
```

If we detect the delete key, we back up the counter and then call PRINT ($FFD2). PRINT will do the work.

```
      DEX
      JSR  $FFD2    (print delete)
      BNE  $2002
```

Here's where we check for a character of the alphabet. But we won't do this check if the line is full. So again, we check X against the contents of $20FF, the line limit.

```
202A  CPX  $20FF
      BEQ  $2002
```

If the character in the A register is less than *A* or greater than Z, we won't echo it and won't store it. This test also catches the "no character" case, which leaves a value of 0 in the A register.

```
      CMP  #$41     ("A")
      BCC  $2014
      CMP  #$5B     ("Z" plus 1)
      BCS  $2014
```

Our character is legitimate. We echo it to the screen and store it away. The X counter is bumped to the next value, of course. Then, we go back to do it all again.

```
      JSR  $FFD2    (Print)
      STA  $2101,X  (Store)
      INX
      BNE  $2002    (Always go back)
```

If we've detected a return character, we come to the following code. We'll store the character. Then we'll print a space to erase any remaining prompt character from the screen. Next, we'll print the return character to get to a new screen line.

```
2040  STA  $2101,X
      LDA  #$20     (space)
      JSR  $FFD2
      LDA  #$0D     (RETURN)
      JSR  $FFD2
```

Let's prove that we received the input correctly by printing it back out. Here comes the loop:

```
      LDX  #$00
204F  LDA  $2101,X
      INX
      JSR  $FFD2    (print)
      CMP  #$0D     (RETURN?)
      BNE  $204F
      RTS
```

Before running this program, remember to put a value into $20FF indicating how many characters you want as a limit.

If you'd rather enter this program in BASIC, type in the program found on page 98. Since it requires accurate typing, use "The Automatic Proofreader," found elsewhere in this issue, when you're entering the program. Be sure to save a copy to disk when you've finished typing.

Next Month:

Jim Butterfield Shows How to Pass Strings Between BASIC and Machine Language

Evolution (ev´ e-lo͞o´ shen) n. The process of growing or developing to a higher state.

INTRODUCING THE NEXT STEP IN CARTRIDGE EVOLUTION!

It started with...
SUPER SNAPSHOT V2

"...probably the most advanced on the market..."
Morton Kevelson, Ahoy! Nov '87
"...useful...fun...exceptional quality..."
David Martin, RUN Dec '87
"All in all, I think this is the best of the bunch." *Tim Sickbert, INFO Jan '88*

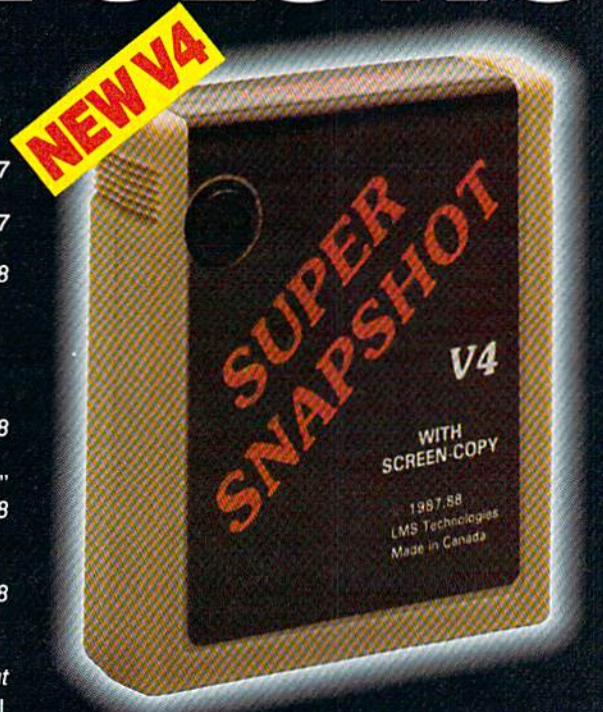
followed by...
SUPER SNAPSHOT V3

"Snapshot + Slideshow = a dynamic duo!" *Sue Albert, INFO May/June '88*
"...one of the most technically advanced...packed with useful features..."
Art Hunkins, Gazette June '88
"...my personal favorite is Super Snapshot."
Morton Kevelson, RUN Sept '88
"Hats off to LMS Technologies. They make a good product."
John Christensen, Input
"The monitor that made me give up all the others."
Lawrence Hiler, Chip Level Designs (formerly of Basement Boys Software)
"...indispensable, can't live without it."
Bob Mills, programmer of Renegade

...and now we bring you
SUPER SNAPSHOT V4

With even MORE of the power-packed utilities you've come to expect from the makers of the most popular utility cartridge in North America!
Available **Nov. '88**
Super Snapshot is used by INFO in producing their magazine.

▸ Version 1, 2, and 3 owners may upgrade to version 4 for $20.00 CALL US! ▸ C128 disable switch, add $8.00 ▸ 10-day, money back guarantee.



ALSO AVAILABLE: SUPER SNAPSHOT SLIDESHOW CREATOR

Powerful options within this package allow you to create slideshows using Snapshotted screens to produce dazzling effects in eye-catching presentations. Options include: displays that can fade in/out, shutter on/off, pop on/off, or slide on/off. Use any of 10 different fonts to display your personalized, scrolling message -ANYWHERE ON THE SCREEN! Slideshow can even be incorporated into your BASIC and ML programs.
"Slideshow and Snapshot are a power partnership."
Sue Albert, INFO May/June '88
"...a gem of a companion: Slideshow Creator... well-designed..."
Art Hunkins, Compute!'s Gazette June '88

Super Snapshot V4 - $64.95
Super Snapshot Slideshow Creator - only $14.95

EVOLUTION OF FEATURES

▸ Works with all 64(C), 128(D), 1541(C), 1571, 1581 ▸ Totally transparent when disabled ▸ Turbo load and save (1541, 1571, 1581): 15x faster loading, 7x faster saving; 25x faster loading with TURBO*25 ▸ Super DOS wedge: all standard commands PLUS extras. Supports devices 8, 9, 10, and 11 ▸ Function keys: pre-programmed and re-programmable **(now 13 f-keys)** ▸ Archiver: saves all memory-resident programs to disk as 1 or 2 autobooting files ▸ Screen Copy: dump to disk in popular graphic program formats or to printer in 3 sizes **(print sprites, more printers supported).** Dumps BOTH multi-colour and hi-res screens (STILL the only utility cartridge of it's kind to do both!) ▸ M/L monitor: DOES NOT CORRUPT MEMORY! Interrupt, examine, modify, and resume a running program. All standard commands PLUS bank-switching, bi-directional scrolling, IO command, track and sector editor, **ASCII hunt, and drive monitor** ▸ Sprite disable and extended life feature. **Now includes sprite re-enable (unique to SS V4)** ▸ **Sprite monitor and full-featured sprite editor** ▸ Fast disk copier: 1 or 2 drives; supports 1541, 1571, and 1581 ▸ **Basic Aids: append, auto, autodata, menu, merge, old, pron, proff, tron, troff, renum** ▸ **File Management System: fast file copier (1541, 1571, 1581 -including partitions, 1 or 2 drives, any combination); scratch, rename, PLUS expert mode** ▸ Free Kracker Jax 100+ parameter disk including nibbler (for those tough back-ups).

SOFTWARE SUPPORT INTERNATIONAL

DEALER INQUIRIES WELCOME

VISA MasterCard DISCOVER

ORDERING: we accept money orders, certified checks, personal checks of previous SSI customers, VISA, MC, DISCOVER and COD. Orders shipped to USA, FPO, APO or Mexico please add $3. COD (available to US customers only) add $2.25 per order. Foreign add $7.50 per cartridge for shipping. Defective items replaced at no charge if accompanied by return authorization number. All in-stock orders are processed within 24 hours. WA residents add 7.5% for sales tax. Mail your order to Software Support Int.-D13, 2700 NE Andresen Rd., Vancouver WA 98661.

LMS TECHNOLOGIES

In Canada order from: Marshview Software, PO Box 1212, Sackville NB E0A 3C0 (506) 536-1809 SS V4 $69.95 Slideshow Creator $19.95

Or call our toll-free order line at 1-800-356-1179, 9am-5pm Pacific time, Monday-Friday. After hour orders accepted at (206) 695-9648 7 days a week. Technical support available. Call (206) 695-9648, 9am-5pm Pacific time, Monday-Friday.

the programmer's page

Randy Thompson
Contributing Editor

"The Programmer's Page" is interested in your programming tips and tricks. Send all submissions to The Programmer's Page, **COMPUTE!'s Gazette,** *P.O. Box 5406, Greensboro, North Carolina 27403. We'll pay $25–$50 for each tip we publish.*

What's the first BASIC command that you learned to use? If you're like most people, it was the PRINT statement. PRINT, as explained in textbooks and programming manuals, sends output to the computer screen. But is that *all* it can do?

On the 64, PRINT has some hidden talents. With just three POKEs, you can make PRINT vocal as well as literate.

Printing in C Major

Type in and run the following one-liner. Be careful when entering the characters contained in quotation marks. Many of these are special graphics characters that are produced by pressing the SHIFT or COMMODORE key in conjunction with another key. There are also a few reverse-on and reverse-off characters. If you're unfamiliar with the way *GAZETTE* lists these characters, see "How to Type In *COMPUTE!'s Gazette* Programs," found elsewhere in this issue.

```
HK 10 POKE209,0:POKE210,212:PO
      KE211,0:PRINT"{K}H*IA@
      {RVS}{A}O{OFF}J{RVS}*
      {OFF}LA@{RVS}PO{OFF}L@
      {C}A@{RVS}{A}{OFF}@{RVS}
      X{OFF}G{*}";
```

By its appearance, you might expect this code to spew strange characters onto the screen. Instead, it plays a simple yet pleasing three-note chord in the key of C major.

To silence the sound, enter POKE 54296,0. This resets the SID chip's volume register, making the chord inaudible. You can enter this POKE from immediate mode or place it in a program line that follows the noisy PRINT statement. You can also turn the sound off by pressing RUN/STOP–RESTORE.

Sound Effects

Using the same technique, it's possible to generate a variety of sound effects for your BASIC programs. Here are just a few:

Ominous Error Noise

```
JK 10 POKE209,0:POKE210,212:PO
      KE211,0:PRINT"ØD HU{V}
      {RVS}{U}{OFF}@@@@@@@@<U@*
       @@@@@O";
```

Ringing Telephone

```
EA 10 POKE209,0:POKE210,212:PO
      KE211,0:PRINT"95*{RVS}@
      {OFF}S@{RVS}{A}{OFF}LA@@
      @@@QA F*@{RVS}{A}{OFF}@@
      @{RVS}<";
```

Plane Engine

```
FR 10 POKE209,0:POKE210,212:PO
      KE211,0:PRINT"{RVS}C
      {OFF}A{RVS} P{OFF}U@
      {RVS}{A}{OFF}LA@@@@@@{+}A
       PA@{A}@@@{RVS}<";
```

Spaceship

```
BH 10 POKE209,0:POKE210,212:PO
      KE211,0:PRINT"{RVS}£
      {OFF}G {RVS}8{OFF}W@
      {RVS}{A}{*}{OFF}'@ØU@
      {RVS}{A}{OFF}{A}D@PA@@@T
      {RVS}{E}{OFF}?";
```

As with the chord example, you must execute a POKE 54296,0 to turn off these sounds.

How It Works

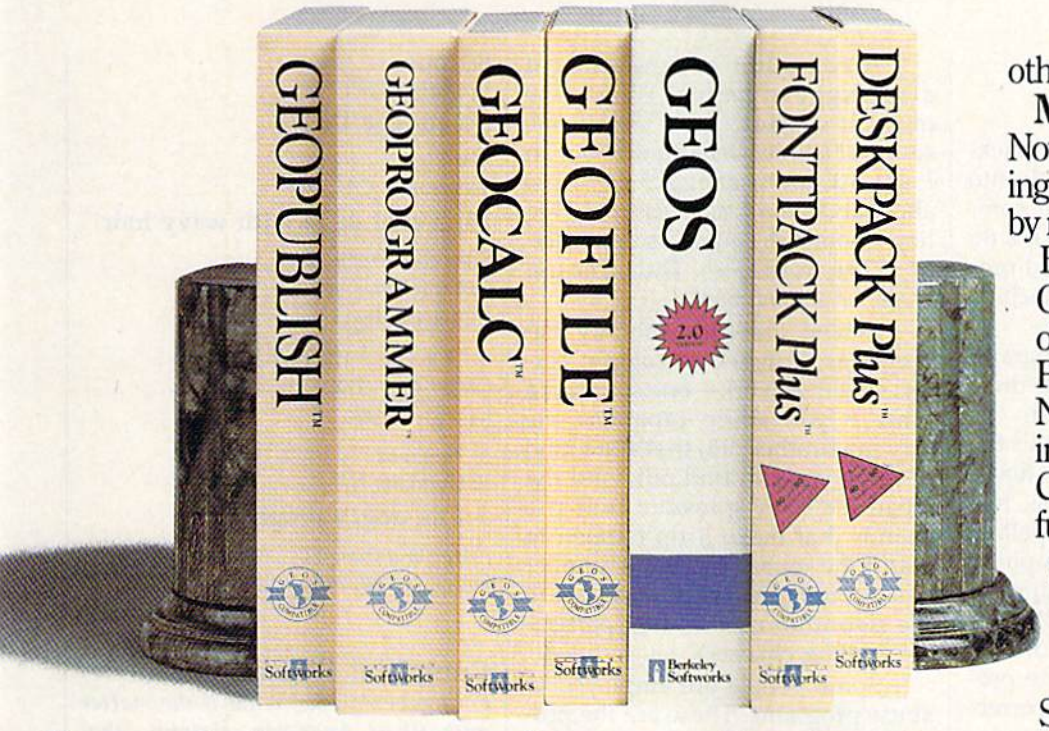
In many respects, PRINT is just a complicated POKE statement. POKE takes a number and stores it at a given address, while PRINT takes a character and stores it at a given screen location. In a sense, PRINT is just POKEing characters into screen memory. The sound programs listed above take advantage of this. Instead of POKEing characters to the screen, I use PRINT to POKE characters to the SID chip registers, thus producing sound. Not only is this method shorter than using 25 POKE statements, but it's much faster.

Three memory locations must be changed in order to direct the PRINT statement's output to the SID chip. The first two memory locations, 209 and 210, point to the address of the current screen line. The third location, 211, specifies the column number (0–79) at which the next character will be placed (the 64 has a logical line length of 80 characters). The address found at these locations determines where in memory—usually screen memory—the PRINT statement will store its characters. To calculate exactly where in memory the next character will be stored, enter PRINT PEEK (209)+PEEK(210)*256 +PEEK (211). To alter these locations, use the code POKE 209,*lb*:POKE 210,*hb* :POKE 211,0, where *lb* and *hb* are the low byte and high byte of the desired memory address.

To send printed characters to the SID chip registers at 54272 ($D400), I use the commands POKE 209,0:POKE 210,212:POKE 211,0. Now, the first character in each string is stored at location 54272, the next character is stored at 54273, the third character is stored at 54274, and so on. (Reverse-on and reverse-off codes don't count as characters because they only change the appearance of other characters; they do not produce any output by themselves.)

Determining which characters to PRINT is the hardest part of getting these sound routines to work. As you know, the computer stores characters in memory as ASCII numbers—the letter *A* is stored as an ASCII 65. But when sent to the screen, these characters are stored as *screen codes,* not in ASCII. To PRINT a 65 to memory, you must send a spade character (SHIFT-A), not an *A*. The screen-code value for an *A* is 1. For a complete list of characters and their corresponding screen-code values, refer to Appendix E in the Commodore 64's *User's Guide.*

IS YOUR FAMILY THIS WELL RELATED?

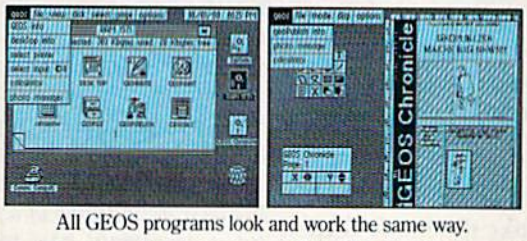


If your productivity programs don't relate to each other, it's time to consider adopting GEOS,™ the totally integrated software system that magazines like *Commodore, RUN, Info* and *Compute!'s Gazette* have recognized as Commodore's first family of software.

Like any good family, GEOS products work together and grow together. In fact, for every application you add, your capacity for production actually multiplies.

A strong family resemblance.

All GEOS products work and look pretty much the same.



All GEOS programs look and work the same way.

Same menus. Same icons. So once you learn how to point and click a mouse, you pretty much know how geoPublish, geoFile, geoCalc and every other family member works, too. Pretty simple, huh?

Well, that's the idea.

GEOS family members freely swap data with one another, too, so importing text and graphics between programs is never a problem. Which means you spend more time creating stuff and less time deciphering all those other instruction manuals.

Marry into the family.

Now, when it comes to improving your looks, the best way is by marrying into our family.

Because GEOS Text and Graphics Grabbers take your old data (like Word Writer,† Paper Clip,† Print Shop† or Newsroom†) and convert it into GEOS format so that your C64 or 128 can deliver beautiful offspring quicker than you can say, "Yeah, but how am I gonna convert all my non-GEOS files?"

And that's pretty darn quick.

So if you'd like your software to relate to each other better, why not move in with us? After all, the last thing you need from your software is family problems.

Berkeley Softworks

The brightest minds are working with Berkeley.

THE GEOS FAMILY

GEOS 2.0* $59.95
The Graphic Environment Operating System for C64's and C128's. With WYSIWYG word processing, spell checking, mail merging, full color painting, fast-loading disk-Turbo and support for all GEOS-compatible applications. GEOS 128 available at $69.95.

GEOPUBLISH* $49.95
The desktop publisher with a host of professional features for creating flyers, newsletters, brochures and more.

DESKPACK *PLUS $29.95**
Graphics Grabber for importing art from Print Shop, Newsroom and Print Master; Calendar; Icon Editor; Blackjack; geoDex and geoMerge. Runs in both 40 and 80 column mode.

FONTPACK *PLUS $29.95**
A collection of 53 fonts for use with GEOS applications. Runs in both 40 and 80 column mode.

GEOCALC* $49.95
Spreadsheet for analyzing all types of numerical data. Available for 128's at $69.95.

GEOFILE* $49.95
Database manager that sorts, edits and prioritizes data. Available for 128's at $69.95.

GEOPROGRAMMER 2.0* $69.95
An assembly language authoring tool and debugger. Takes full advantage of memory space in both C64's and C128's.

To order, call 1-800-443-1011 Ext. 234 or see your local Commodore dealer.

*Trademarks of Berkeley Softworks.
†Registered trademarks of others.

Abusing Software

Rhett Anderson
Assistant Editor

Computers are the ultimate quick-change artists. Just pop a disk into the drive, boot up, and your computer has put on a disguise. It's no longer a computer; it's a word processor. Now it's a number-crunching spreadsheet. Now it's a game.

No matter how hard programmers try to fool you, though, there still is a computer underneath.

I started to think about this the last time I went to my parent's house in Ohio. My brother, Matthew, had fed a random text file into a spelling checker on my father's computer. He occupied himself by laughing at the suggestions the spelling checker made. When he found that for a lot of small nonsense words, the program suggested *Jew* as the correction, Matt stumbled across something that I've been thinking about ever since.

What is the meaning of this? Does it say something profound about the English language? That may be part of it, but my bet is that it says more about the algorithm used to select sound-alikes for English words.

Remember, while you or I would have a lot of trouble making heads or tails of a random sequence of characters, the computer isn't surprised at all—to a computer, all text is created equal, be it Shakespeare, a high school term paper, or random gibberish. Its algorithm tells it to take things one word at a time. Inside the word, it takes one sound at a time.

For an example, look at the sentence *The ghoti made for a good meal.* The spelling checker's dictionary recognizes every word but one: *ghoti.*

A person might translate the sentence like this: *The goatee made for a good meal.* A goatee is a tuft-like beard. Something's wrong here.

A computer program might also suggest *goatee.* What else might it suggest? Let's take it one sound at a time. *GH*—how about an *F* sound, as in *enough? O*—how about an *I* sound, as in *women?* TI—how about a *sh* sound, as in *translation?* The word? *Fish.* Thus, *The fish made for a good meal.*

Indeed, that's just the way that programs designed to suggest correct spellings work—one sound at a time. If you abuse programs the way my brother did, that's the kind of thing you can find out. And the word *Jew?* My guess is that the sounds that make it up happen to match the sounds in a good number of short nonsense words (at least to the algorithm used in that particular spelling checker).

Some people are employed to abuse programs. These are the program testers. At large software companies, you could probably find a roomful of people playing the next hot computer game or laboring over a new spreadsheet's documentation. Smaller companies hire outside beta testers to catalog the bugs in their programs.

The next time you sit down in front of a program, don't use it—abuse it.

Our Readers' Faces

"Horizons" thanks the many readers who sent in their favorite telecommunications faces. If you missed the September column, these are the faces that people make when they communicate with each other over an online service like CompuServe or Q-Link. (Tilt your head to the left to see the faces.)

:D a big smile
Doug Grabowski Jr.
Clinton, CT

(Doug found this one in a reproduction of a newsletter printed on page 15 of the September *GAZETTE.*)

(8-) someone wearing glasses
Jim Turk
Virginia Beach, VA

:-& tongue-tied
Wes Biggs
Sebastopol, CA

?B) a cool dude with wavy hair
Scott Silverman
Los Angeles, CA

o) a cyclops
B. "Cyclops" Mitchell
Long Beach, NY

!-(a pirate
L. Borshard
Parsippany, NJ

>:I an angry programmer
Joseph Mancuso
Staten Island, NY

Complaint Department

For heaven's sake! What is the matter with Rhett Anderson, claiming that the word horizons *"comes indirectly from the Greek word* kyklos, *meaning* a bounding circle . . .*"?*

Any standard American Heritage dictionary would have told Rhett—had he taken the two minutes it takes to look it up—that horizon *comes directly from the Greek* horizon, *from the present participle of* horizein (to divide, separate), *from* horos (boundary, limit).

In working with words, one of the first obligations of a writer or editor is to remain true to their lexical meanings, if used in a serious context (which I presume the column was meant to be). If this quality is lacking, the credibility of the whole piece can be called into question by purists or not-so-purist readers such as me.
F. Paul Kosbab
Tulsa, OK

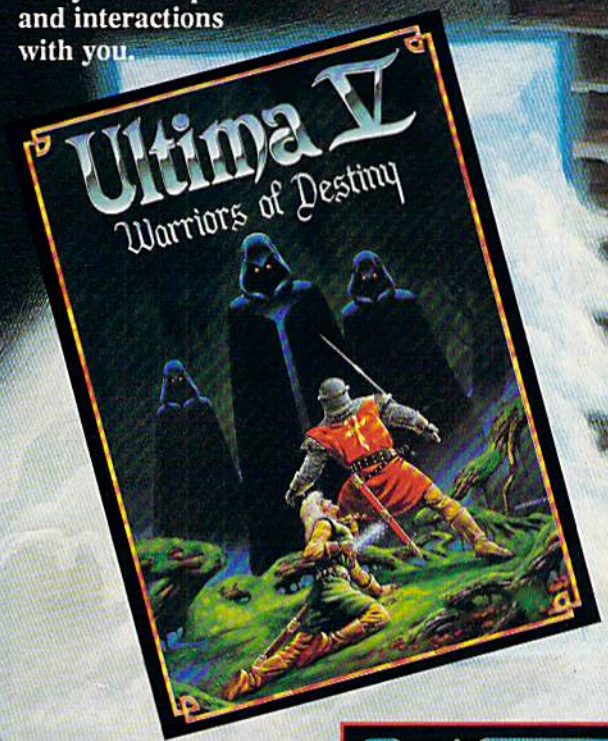
Here is the derivation from the Random House dictionary I used: [<L <Gk *horizōn (kyklos)* bounding (circle)]. It looks as though *horizon* meant *bounding* and *kyklos* meant *circle.* Thanks, Paul, for clearing up the "Horizons" identity crisis.

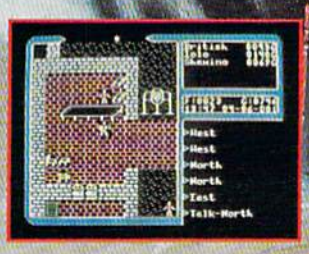
The wait is over...
but the excitement has just begun.

More than two years in the making, Warriors of Destiny sets the new standard for role-playing games. No other game can offer you as beautifully detailed a world or as exciting an adventure. Ultima V is the game for all role-playing gamers: Warriors of Destiny will enchant the novice and challenge the expert.

Highlights of Ultima V

- Powerful new combat and magic systems, increasing in sophistication as your skill increases.
- Over twice the graphic detail, animation and sound effects of earlier games.
- Hundreds of truly life-like people who can carry on complex conversations and interactions with you.





Screen displays shown from the Apple™. Others may vary. Allows the use of Ultima IV characters. No previous Ultima experience required.

ORIGIN SYSTEMS INC.

136 Harvey Road
Building 'B'
Londonderry, NH 03053

Protecto's

COMPUTER DIRECT

Since 1979

WE WON'T BE UNDERSOLD!*

Prices Expire 12-31-88

Complete C64c Commodore System

- Commodore 64c Computer
- 1541 II Disk Drive
- 12" Monochrome Monitor
- Genuine IBM® Printer With Interface And One Roll Of Paper
- GEOS Program For Word Processing & Drawing

Our Low Sale Price

$395.95

List $825

C128D Computer

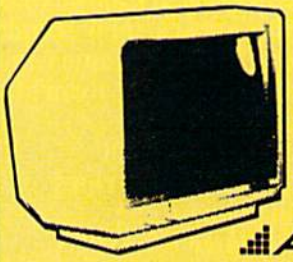
- Full 128 Detached Keyboard
- 1571 Drive With 128K Of User Memory Expandable To 640K
- 3 Operation Modes (C64, C128, & CP/M, Ver. 3.0)
- 40/80 Column Output, 16 colors
- **Free Programmer's Reference Guide**

Our Low Sale Price

$419.95

List $549

12" Amber Monitor



2 Year Limited Manufacturer's Warranty

AMDEK

- High Resolution
- 80 Column
- 1000 Lines At Center
- Great For Business
- Fantastic Value

Our Low Sale Price

$79.95

List $329

5¼" Floppy Disks

Double Sided Double Density
Minimum Quantity 50
Maximum Quantity 250

19¢ each

Box of 50 ..... **$9.50 (19¢ each)**
(without sleeves)

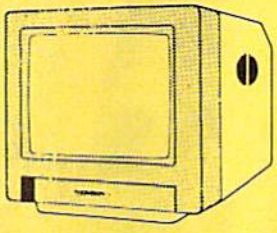
Box of 50..... **$10.50 (21¢ each)**
(with sleeves)

Box of 100 (no limit)... **$24.00 (24¢ each)**
(with sleeves & labels)

Economy Sleeves	$1.00 per quantity of 50
Disk Labels	$3.95 per quantity of 100
Disk Notchers	$3.95 each

- 100% Certified
- 100% Made in the U.S.A
- State-of-the-art Technology
- Unconditional guarantee

13" RGB/Composite Color Monitor



THOMSON
The Vision of Personal Computers.

- Black Dot Screen
- 3 Monitors In One - Composite/RGB/80 Column
- Green Screen Only Switch
- Cables Included (please specify computer)

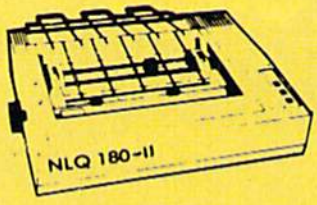
Our Low Sale Price

$199.95

List $399

Hi-Speed NLQ 180-II

New Two-Year Warranty



- Dot Addressable Graphics
- High Speed Dot Matrix
- Italics - Elite - Condensed - Pica
- Tractor/Friction Feed
- Centronics Parallel Port
- * Lifetime Warranty on Print Head
- 8K Print Buffer
- Near Letter Quality from Front Panel
- Low Cost Adapters available

Our Low Sale Price

$149.95

List $499

IMMEDIATE ANSWER

Call **800 - BUY - WISE**

800 - 289 - 9473

Mail

We Love Our Customers!

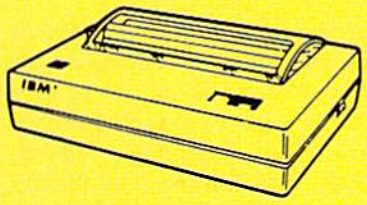
COMPUTER DIRECT
22292 N. Pepper Rd.
Barrington, IL 60010

BEST SERVICE IN THE USA (Price is Not Enough!)

- Fast, Low Cost Delivery
- 15 Day Home Trial
- Free Technical Assistance
- No Credit Card Fees
- 90 Day Immediate Replacement
- Free Catalogs

Genuine IBM® Printer

8½" Letter Size • 80 Column
Limited Quantities



- Upper & Lower Case (with true lower descenders)
- Advanced Dot Matrix - Heat Transfer
- Graphics With Commodore, & Apple Interfaces
- Ready to Hook Up To Serial Port Of IBM® PCjr.
- Low Cost Adapters For IBM®, Apple, Commodore, & Laser Computers
- Underline & Enlarged

Our Low Sale Price

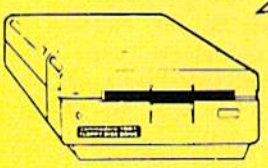
$49.95

List $199

800K 3½" Disk Drive

Commodore 1581 Works With C64/C64c, and C128/C128D.
Over 800K Bytes of Formatted Storage On Double-Sided 3.5" Microdiskettes.

Super 81 Utilities Sale $29.95



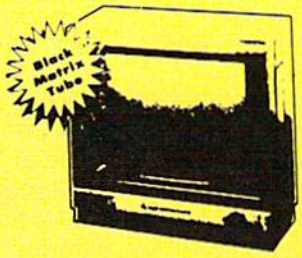
Our Low Sale Price

$179.95

List $249

(Add $10.00 shipping.*)

13" Color Composite Monitor



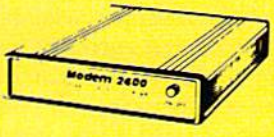
- Anti-Glare Screen
- Audio Speaker
- Volume Control
- Black Matrix Tube
- Horizontal Resolution 260 Lines
- Includes Composite Cable

Our Low Sale Price

$149.95

List $329

300/1200/2400 BPS External Modem



Modem 2400 Features:

- 2400 BAUD Bell 212A at 300/1200/2400 BPS
- Fully Hayes Compatible
- 7 System Indicator Lights
- Both Tone & Pulse Dialing
- Built-In Speaker with Volume Control
- Buffer That Holds Up To 40 Characters
- Stores Dialed Numbers
- Separate Line and Set Connectors
- Uses RS-232C Interface (Cable Required)

Our Low Sale Price

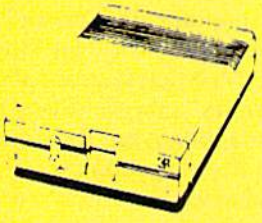
$149.95

List $349

(Add $3.00 shipping.*)

1541-II Disk Drive

1541/1571 Drive Alignment Sale $19.95



Our Low Sale Price

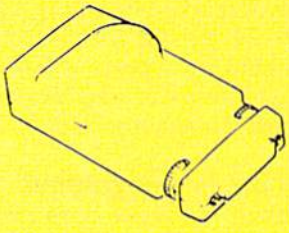
$159.95

List $299

(Add $10.00 shipping.*)

300/1200 BPS Migent Pocket Modem

Free Terminal Software



- Hayes compatible
- Runs on AC or battery
- Turns on/off automatically
- Small enough to put in your pocket
- Plugs directly into your serial port on many computers
- Easy to use; no switches to set
- On-screen status lights show call progress

Our Low Sale Price

$99.95

List $413

VISA
MASTER CARD
COD

Prices do not include Shipping Charges. Call to get Your Lowest Delivered Cost. We insure all shipments at no extra cost to you! All packages are normally shipped UPS Ground. 2nd Day or Overnight delivery available. Minimum shipping charge per order is $3.75, Illinois residents add 6½% sales tax. We ship to all points in the U.S; Canada, Puerto Rico, Alaska, Hawaii, Virgin Islands and APO-FPO. (Monitors only shipped in Continental USA) Prices and availability subject to change without notice.

d'iversions

An Electronic Field Trip

Fred D'Ignazio
Contributing Editor

In a recent nine-nation Gallup survey conducted for the National Geographic Society, half of the adults did not know that Nicaragua was the country where the Contras and Sandinistas are fighting. Almost a third couldn't identify a single member of NATO.

This survey also found that adult Americans' map-reading skills were abysmal. When asked to identify states in the U.S., adults could correctly identify fewer than six of every ten states. More than half of the adults couldn't find Japan on a world map; one out of seven could not find the U.S. And a third of all adults could not use a road map correctly.

The U.S. also has the distinction of being the only country surveyed where its students score worse than its adults. In a recent geography test taken by young adults, ages 18–24, the Americans came in last, behind their peers in Sweden, West Germany, Canada, Mexico, Italy, Great Britain, and Japan.

Just What Is Geography?

Try putting the above question to a geography teacher—if you can find one. Only two states require students to take geography before graduation—and then only as a filler subject between social studies and history. And fewer than 10 percent of our country's geography teachers majored in the subject in college. According to the *Washington Post*, the real problem is that nobody seems to have thought out exactly what geography is.

The National Geographic Society is the big exception. After a hundred years of thinking, it says geography "deals with the physical and cultural realities of the world. It helps us understand the varied and complex environments of the Earth. It gives meaning to location and establishes a context for understanding the connections among places."

The Society tries to teach geography with a variety of excellent magazines, videotapes, and books. But to really learn geography, you have to travel. In the context of school, travel means field trips. Students must leave the classroom and take field trips all over the world. They must consult maps and plan their journeys. They must research their journeys before they leave and try to match their research with careful observation while traveling.

A New Kind of Field Trip

Unfortunately, field trips are not the answer to most students' awful ignorance of geography—at least not real field trips to real places. As any teacher knows, field trips are expensive, time-consuming, and laborious. It's not easy to pack 30 kids into a school bus and then drive them around the countryside.

The only alternative to real field trips—and to futile textbook memorization—is the *electronic* field trip. For example, a teacher can take an entire class on an electronic field trip by showing them a videotape depicting faraway places. The students' imaginations and senses are uplifted, but their bodies remain in the classroom.

Videotapes are wonderful, but they are a passive medium, not interactive. Students are swept along on magic carpet rides, but there isn't a steering wheel.

The new interactive videodisc technologies, including CD-I and DVI, offer the greatest hope for electronic *interactive* field trips. In my September column, "Murder at Palenque," I described a wonderful computer-videodisc field trip at Bank Street College. Using a joystick, students can "walk" around the ruins of the ancient Mayan city of Palenque, deep in a Central American jungle. By clicking on an onscreen icon, children can call up expert tour guides who tell them vital facts about Palenque's history, economy, and culture. The feeling of being in Palenque is awesome. And, with the joystick, students have full control over the journey. They can amble about like careful archaeologists or blast up the temple stairs on electronic dirt bikes.

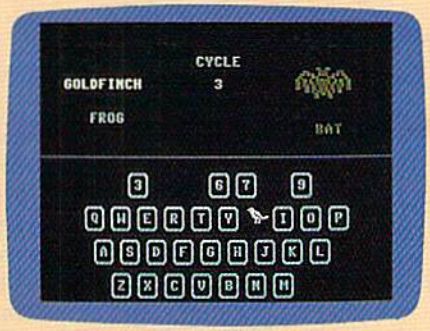
Why Am I Here?

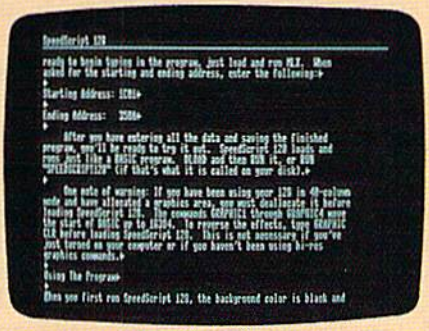
If children are going to learn geography on their electronic field trips, the trips must combine several elements. They must appeal to children's senses and imagination so that they feel as though they're vicariously experiencing a real journey and going to a real place. They must give children control over the journey—children "pilots" and "navigators" must be able to turn left, turn right, and explore wherever their fascination and curiosity lead them. The experiential journey children are making through space must be linked with a conceptual journey through "knowledge space"—children's sensory impressions must be embedded in geography concepts and in real knowledge about a locale's history, people, and the life-and-death issues they face. Last, trips must give children a motive for traveling—visits to faraway places are interesting if the sights are spectacular or the journey is wild, fast-paced, or dangerous; but not all places are like this. For an electronic field trip to capture children and concentrate their attention and imagination, it must give the children a mission—a task to accomplish, a problem to solve, a challenge that cannot be refused.

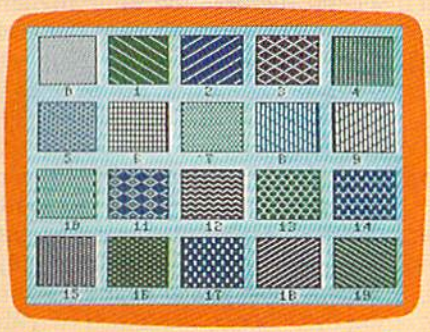
Next month, I'll look at software that takes children on electronic field trips.

BUILT FOR SPEED

Now Get Inside Your Commodore with *COMPUTE!'s Gazette Disk.*







Now there's a way to get all the exciting, fun-filled programs of ***COMPUTE!'s Gazette***—already on disk—with ***COMPUTE!'s Gazette Disk.***

Subscribe today, and month after month you'll get a new, fully-tested 5¼-inch floppy disk guaranteed to run on your Commodore 64, or Commodore 128 personal computer.

COMPUTE!'s Gazette Disk brings you all the latest, most challenging, most fascinating programs published in the corresponding issue of ***COMPUTE!'s Gazette.*** So instead of spending hours typing in each program, now all you do is insert the disk . . . and your programs load in seconds.

RESULT: You have hours more time to enjoy all those great programs which appear in ***COMPUTE!'s Gazette***—programs like SpeedScript 128, Arcade Volleyball, 3-D Sprites, Sketch Pad, Sound Manager, 1541 Speed and Alignment Tester, and hundreds more.

So don't waste another moment. Subscribe today to ***COMPUTE!'s Gazette Disk*** at this money-saving price. Take a full year's subscription for just $69.95. You save 55% off the single issue price. Subscribe for two years and save even more! Return the enclosed card now.

Individual issues of the *Disk* are available for $12.95 (plus $2.00 shipping and handling) by writing us at P.O. Box 5188 Greensboro, N.C. 27403.

DIGI-SOUND

Roger Freeman

"Digi-Sound" is your 64's passport to the world of digitized sound. You can record the music of Bach or the Beatles, or the sounds of trains, ducks, sirens—anything, in fact—and then use them in your own programs.

Digi-Sound works by using your computer to analyze and store the sound information that is transmitted by a standard Commodore Datassette, which is normally used for program and data storage.

Ready to be amazed? This program brings sound and music from the real world directly into your Commodore 64 or 128. A Datassette and a disk drive are required.

Getting Started

There are two versions of Digi-Sound. Program 1 is the 64 version. Program 2 is for the 128. Both versions are written in BASIC with machine language routines in DATA statements. Type in the version for your computer. To ensure accuracy, you should use "The Automatic Proofreader," found elsewhere in this issue. Be sure to save a copy to disk after you've finished typing. *(Note: Do not make any changes to the 128 version of the program; if the program is lengthened, it may overwrite a critical portion of memory.)*

When you're ready to use Digi-Sound, load and run the appropriate version. You'll see a menu with several options (six if you're using a 64, seven if you're using a 128). Choose option 1 to digitize sound from a tape in the Datassette. Press PLAY on the Datassette. The screen blanks and, depending on the type of sound, the computer digitizes anywhere from 10 to 20 seconds' worth of sound (30 seconds to two minutes on the 128).

To play the sound back, choose option 2. To save the sound in memory to a disk file for later use, choose option 3. Option 4 is used to load a sound from disk into memory. Keep in mind that the disk files saved by Digi-Sound are 178 blocks long (430 blocks on the 128). Option 5 lets you preview the way that your sounds will digitize. The sound is *not* being saved to memory when you use this option. In the 128 version of the program, you can view the disk directory with option 6. To quit the program, choose option 6 on the 64 or option 7 on the 128.

In the 128 version of the program, the filenames for loads and saves must be no longer than 14 characters because the sound information is saved as two files. The second file uses the same filename with a ".2" appended to the end.

The files saved by both versions of Digi-Sound can be used independently of Digi-Sound. This lets you easily trade sounds with friends or upload them to electronic bulletin board systems. To load a digitized sound file on the 64, simply type LOAD"filename",8,1. Type SYS 49152 to hear the sound. On the 128 you must load two files.

First type BLOAD"filename",b0 ,p9728. When the first file has finished loading, load the second by typing BLOAD"filename.2",b1 ,p9728. After the second file has loaded, type BANK 0, then FAST. If you are in 40-column mode, your screen goes blank. Now type SYS 64000 to play back the sound. After the sound has stopped, type SLOW if you are in 40-column mode to return to the normal screen.

How It Works

Digitizing is the process of storing video or audio information as numbers. Digitized audio information can be played back by a computer to form an approximation of the original sound. Digitized sounds are known as *samples*.

The sounds that you digitize with Digi-Sound will not have the quality of the original sounds on tape. The primary reason for this is that the Datassette was never intended to do what it's being used for in this program. The only information the Datassette transmits is whether there is sound or not. It doesn't transmit the volume of the sound.

Digi-Sound works by toggling one of the SID chip's volume registers between 0 and 15. This click, when produced very frequently, creates the sounds that you hear. The sound information in the 64 version is stored in BASIC's RAM from 4096 to 40959—a total of 36,863 bytes of storage.

In the 128 version of Digi-Sound, the sound data occupies BASIC's RAM from 9984 to 63999 in bank 0, and the same area in bank 1. The 128 version uses 108,030 bytes of memory in this area. The 128 is slowed down because it must switch banks quite often. To compensate, the program takes advantage of the 128's fast mode during digitization and playback.

When you're in continuous-play mode, the only way to exit is to press RUN/STOP–RESTORE.

Sound Tips

The following information should help you to produce long-playing, high-quality samples. First of all, the fewer the number of sounds playing at one time, the better the quality of the sample. Classical music seems to work very well, while rock music with many different instruments produces a more cluttered-sounding sample. If you digitize a person talking, you'll have a fairly clear recording if the spoken words are enunciated clearly. The Datassette doesn't transmit a signal if the sound is too quiet, so make sure that the sound, music, or voice has been recorded at a fairly high volume.

On the Commodore 64, voices last around 20 seconds or more, classical music lasts about 17 to 18 seconds, and rock music lasts about 10 seconds. On the Commodore 128, voices last around two minutes, classical music lasts around one minute, and rock songs last around 30 seconds. If you own a Commodore 128, be sure that you use the 128 version, because the quality and length of its digitization are significantly better than the 64 version's.

See program listings on page 89.

Up periscope!
Also!
ThunderChopper, available for the Commodore 64/128 and Apple II computers. Coming soon, a great new IBM version!
The creators of Microsoft Flight Simulator Version 3.0 take submarine simulation to new depths of FUN!
See your dealer, or contact ActionSoft for more information. Up Periscope! is available on disk for the IBM/Tandy/ compatibles and Commodore 64/128 computers. For direct orders please indicate which computer version you want, enclose $29.95 plus $2.50 for shipping and handling, and specify UPS or first class mail delivery. Visa, MasterCard, and American Express charges accepted.
ActionSoft
201 West Springfield Avenue
Suite 711
Champaign, IL 61820
(217) 398-8388
Thunderchopper

MATERIALIZER

Peter M. L. Lottrup

Create sensational pixel-by-pixel fade-ins and fade-outs of any Commodore 64 text screen with this amazing graphics utility for BASIC programmers. Disk drive required.

Looking for a way to spice up your programs or make them unique? "Materializer" is a short machine language utility that adds text-screen fade-ins and fade-outs to your BASIC programs. The utility is fully compatible with custom character sets. It does not use any BASIC memory.

Typing It In

Program 1, Materializer, is written entirely in machine language. To enter it, you must use "MLX," the machine language entry utility. When you run MLX, you are asked for the starting and ending addresses of the data you'll be entering. The MLX prompts, and the values you should type in, are as follows:

Starting address: CC00
Ending address: CD62

Be sure to save a copy to disk with the filename ML-MAT before exiting MLX.

Program 2 is a demo program that shows you how to use Materializer's features. The demo checks to see if the ML routine is in memory. If it isn't, the demo attempts to load it as ML-MAT.

Special Effects

To load Materializer, type LOAD "ML-MAT",8,1. To activate Materializer from within your program, use the command SYS 52224. The screen clears. Everything you print after this will be invisible until you choose to materialize it.

When you've created the screen that you want to materialize, start the effect with the statement SYS 52227. The speed of the fade-in depends on the value at address 680. A value of 0 results in the fastest speed. A value of 255 is the slowest. (For example, POKE 680,255 for a slow fade.)

Use SYS 52230 to dematerialize the screen. Like the fade-in speed, the fade-out speed depends on the value at address 680.

SYS 52233 deactivates Materializer. If you press RUN/STOP while the character set is invisible, you'll have to type SYS 52233 to restore the computer to normal. Pressing RUN/STOP–RESTORE resets the video chip to BANK 0 RAM but leaves the text-screen pointer at the wrong address. Type POKE 648,4 to restore the computer to normal.

Program Notes

The routine works by switching the character set from ROM to RAM. It copies the character set to $A000–$A7FF (under BASIC ROM). The materialization is then created by turning on selected bits as the character patterns are copied to $C000. The fade-out effect is created by resetting individual bits of the character patterns in the same way.

While the routine is active, any POKEs or PEEKs to the text-screen or sprite-pattern pointers should be directed to the alternate memory at $C800–$CBFF. Custom characters should be copied to memory, at $A000, before the materializing call (SYS 52227) is used. The demo program provides an example of this.

While the routine is active, Materializer uses memory at $A000–$A7FF, $C000–$CD62, and some zero-page locations.

See program listings on page 91.

Red Storm Rising™

You're captain of an American nuclear attack submarine. And your ship is all that stands between the Russian bear and global domination. Experience the pulse-pounding tension of **Red Storm Rising**. . . a frighteningly realistic blend of contemporary high technology and classic military strategy. Based on Tom Clancy's #1 and created, with the author, by famed programmer/designer Sid Meier — the mind behind **F-15 Strike Eagle** and **Silent Service**. For the Commodore 64/128 systems and soon for IBM/PC compatibles and Apple II. Suggested retail price, $44.95.

Red Storm Rising. Find out if you have what it takes to tackle the Russian bear.

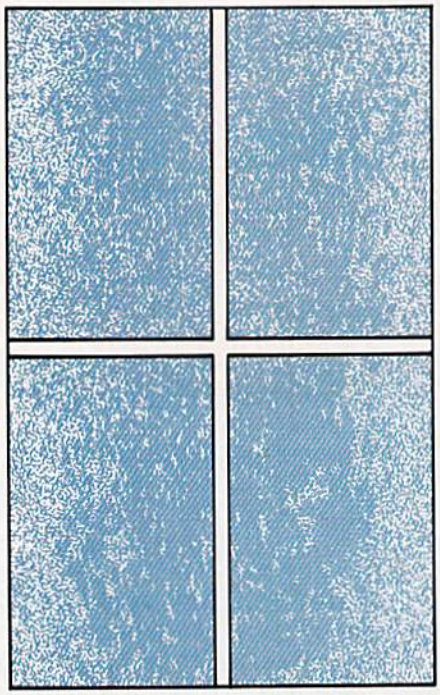
MICROPROSE

180 Lakefront Drive Hunt Valley, Maryland 21030
(301) 771-1151

Based on the book *Red Storm Rising*, by Tom Clancy; Larry Bond co-author. Copyright 1986 by Jack Ryan Enterprises Ltd. and Larry Bond. Software © 1988 by MicroProse Software, Inc. All Rights Reserved.

Dynamic Windows

Michael Broussard



You might think that the snazzy pop-up windows found in commercial software would be difficult to create and use in your own programs, but with "Dynamic Windows," they're a snap. For the 64 with disk drive.

Many programs display information in pop-up windows on the screen. These windows appear and disappear at the touch of a button or key, and when they go away, the screen is restored as if the window had never been there. If you want to give your BASIC programs a professional look, try "Dynamic Windows," a powerful utility that can control up to 20 independent windows.

Dynamic Windows is packed with features. You have full control over color, borders, and text formatting. The windows can even overlap.

Getting Started

Program 1, Dynamic Windows, is written entirely in machine language. Type it in with "MLX," the machine language entry program found elsewhere in this issue. When MLX prompts you, respond with the values given below.

Starting address: C000
Ending address: C2AF

Carefully enter the data for Program 1. When you've finished typing, save the program to disk with the name WINDOW.OBJ. The demo program expects to find a file of this name when it is run.

Program 2 is a BASIC demo that shows how the pop-up windows work. To ensure accuracy, enter it using "The Automatic Proofreader," found elsewhere in this issue. Be sure to save a copy to disk before you run it.

The demo program first clears the screen and fills it with boxes. It then opens and closes windows at random locations on the screen based on your selections from a menu (which is also displayed in a window). If you study the listing carefully, you'll see that the first thing the demo program does is load the file WINDOW.OBJ (line 20). You'll need to do this in any program you write that uses Dynamic Windows.

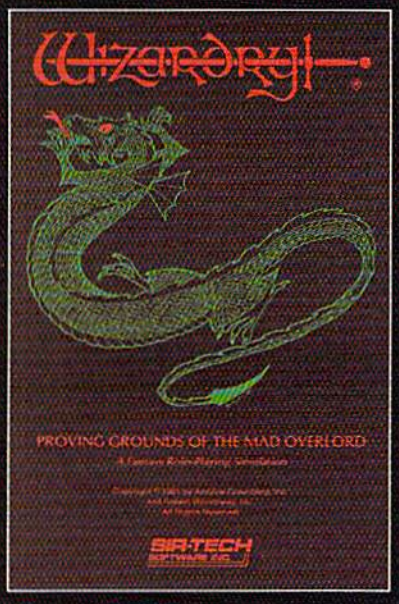
Windowing Commands

Dynamic Windows offers two commands to BASIC programmers. The first command opens a window. The syntax for this command is

SYS 49152,*row,col,height,width,color,text*

The parameter *row* is the row at which the window is to begin on the screen. Rows are numbered 1–24. The next parameter, *col*, is the column where the window is to start on the screen. Columns are numbered 1–40. Use *height* and *width* to set the size of the window in characters. Both *height* and *width* must be at least 3. The parameter *color* is the background color to be used for the window, according to the values shown in the accompanying table. ▷

Wizardry®



Now the world of Wizardry comes to Commodore 64/128

PROVING GROUNDS of the MAD OVERLORD

Also available for:
Apple II Series,
IBM PC & compatibles,
Tandy 1000 SX & EX,
Macintosh

With your Commodore 64 or 128 you can now experience an exciting initiation into the internationally-acclaimed world of the Wizardry Gaming System.

Begin with the first scenario*: Proving Grounds of the Mad Overlord. It challenges you to overcome devious tricks and sudden traps, strange and mysterious encounters, maze upon maze of puzzles, stimulating and intricate sub-plots and sophisticated themes. Ingenious multi-level, mind-bending tests abound with vile creatures, unspeakable villains, courageous adventurers and strong allies to hinder and help you achieve ultimate victory.

SIR-TECH

Sir-tech Software, Inc.,
P.O. Box 245, Ogdensburg, NY 13669
(315) 393-6633

® Registered trademark of Sir-tech Software, Inc.
© Copyright by Sir-tech Software, Inc.
Commodore is a registered trademark of Commodore International

PLAY IT TO THE HILT!

* Many other Wizardry scenarios coming for Commodore players.

Colors

Number	Color	Number	Color
0	Black	8	Orange
1	White	9	Brown
2	Red	10	Light red
3	Cyan	11	Dark gray
4	Purple	12	Medium gray
5	Green	13	Light green
6	Blue	14	Light blue
7	Yellow	15	Light gray

The final parameter, *text*, is a string to be displayed in the window. This parameter is optional—if you omit it, the window will be left blank. (If you leave out the string, also omit the comma preceding it.)

A single-character border surrounds the window, so the minimum window size is 3 × 3. If you specify a window that small, you end up with mostly border, as there will only be one character left in the center to contain any data.

If you specify a string to be displayed in the window, the first character of the string is displayed in the upper left corner. Subsequent characters of the string fill in the rest of the first row. The string continues on the next line if it is too long for one line. If the string is longer than the area of the interior of the window, the extra characters are ignored, and if the string is shorter, the rest of the window is padded with spaces.

Formatting Text

The left-arrow character (←), when embedded in a string, tells Dynamic Windows to continue the string on the next line and pads the rest of the current line with spaces. The up-arrow character (↑) is replaced by five spaces in the window—you can think of it as a tab character.

As an example, suppose you want to open a red, 3 × 6 window centered at the top of the screen. Since the window will have a border, its real size is 5 × 8. In order for the window to be centered, it should start in column 16. Also suppose you want to center the word *TEST* on the second line of the window. To accomplish this, set some string variable—say, S$—to "← TEST". The ← character causes the first line of the window to be left blank. The second line will contain a space and the word *TEST*. The rest of the window will be blank.

In order to display a lot of text in a window, you may need to build a string longer than 80 characters. This is done using several program lines:

```
10 S$="THIS IS A PRETTY LONG
   STRING"
20 S$=S$ + " AND NOW IT IS EVEN
   LONGER"
30 S$=S$ + " AND LONGER."
```

With this technique, the maximum length of a string is 255 characters, or enough to fill a 16 × 16 window. If you want more text than this in your window, position the cursor in the window and display the text with the PRINT statement.

To close an open window, use the statement

```
SYS 49155
```

This closes the last window opened and restores the screen. You can close more than one window with the same SYS if you like—just specify the number of windows to close. For example,

```
SYS 49155,3
```

closes the last three windows opened.

Any of the parameters to the open or close subroutines can be expressions. For example,

```
SYS 49152,X+3,SQR(64)+2,6,N+14,C,"
  LINE 1"+"← LINE 2"
```

works fine, with the size, placement, and color of the window dependent on the values of X, N, and C.

Technical Notes

The default window-border character is a space (screen code 32), but you can change this to any character you wish by POKEing the appropriate screen code into location 49838. The demonstration program selects border characters at random, choosing from among screen codes 32, 102, 214, 127, and 215 (a complete list of screen codes can be found in the *Commodore 64 Programmer's Reference Guide*). Also, the windows are displayed in reverse video, so that the color you specify becomes the window background color and the characters within the window are the same color as the screen background. If you prefer, you can have a solid-colored border around your window, with the characters displayed in the window color and the window background color the same as the screen color. This is accomplished with the commands

```
POKE 49838,160:POKE 49839,0
```

(The default values for those locations are 32 and 128, respectively.)

If you try to open more than 20 windows at once, you'll get an ?OUT OF MEMORY error. If you try to close more windows than are currently open, you'll get an ?ILLEGAL QUANTITY ERROR. Attempting to define a window that is too small or that will not fit on the screen generates an ?ILLEGAL QUANTITY ERROR. You will also get this error if you try to specify a window color identical to the default background color.

When a window is opened, the original text hidden behind the window is copied into a buffer so that it can be restored when the window is closed. This buffer can hold about 8192 bytes, or 4096 characters of windows and associated colors. If you open too many large windows simultaneously and the buffer gets full, you get an ?OUT OF MEMORY error even if you haven't opened all 20 windows. The demonstration program guards against overflowing the buffer by limiting the number of windows you can open.

Be sure to close a window using the appropriate SYS call when you've finished with it. Clearing the screen erases the display, but any windows are still logically open. You can find out how many windows are open at any given instant by PEEKing the value at location 2. You can close all open windows at once with the following statement:

```
SYS 49155,PEEK(2)
```

Or, if you want to get rid of all open windows without restoring the underlying text on the screen, you can clear the screen and then POKE 2,0.

When developing a BASIC program that uses windows, be sure to save your work often. If your program aborts for any reason, be sure to poke a 0 into location 2 before restarting it. Windows does a lot of checking, but if you restart an aborted program without closing all open windows, you may lock up the system.

See program listings on page 95.

NICE GUYS FINISH LAST

Feeling mean, video warrior? Then join **Street Fighters** Ryu and Ken and take on ten of the roughest martial arts fighters around the world. The action is fast, and the graphics are great as you jump, flip, and stoop to avoid the enemy blows. Then go on an offensive assault as you kick and punch (and, if you're really bad, throw ninja fireballs) on your way to victory.

Ready for more? Then leap into an action-packed battle as the **Bionic Commando.** You're our last hope against an entire army of invading forces. Use your incredibly powerful, extending bionic arm and all the rapid-fire, armor piercing weapons available to blast your way through the enemy's defenses. Only the fastest, grittiest video warriors will get out alive.

So get tough, get mean, and get into the action as the Street Fighter and the Bionic Commando. Because in these games, nice guys finish last!

CAPCOM

1283-C Old Mountain View/Alviso Rd.
Sunnyvale, CA 94089
(408) 745-7081

Available for Commodore, IBM, Atari ST and Amiga computer systems!

THE DEFINITIVE REFERENCE FOR COMMODORE USERS

GAZETTE™

BACK ISSUES

Note: Only selected titles are listed in contents for each issue

COMPLETE YOUR COLLECTION! ANY ISSUE FOR $6

Issues not listed are sold out. Limited quantities available.

Order today!

1984

August—Selecting a Printer Interface, Campaign Manager, Sprite Magic, String Search, Disk Purge
October—The Tomb, Cabby, Quiz Master, Vocab Builder, First Aid, VIC Music Tutor, Turtle Graphics Interpreter

1985

August—Mixing Text and Hi-Res Graphics, Disk Backup, Code Cruncher, Hi-Res Toolbox
December—Whirlybird, Dragon's Den, Graphics Construction Set, SpeedCheck, Disk File Archiver

1986

January—Sprint: A Compiler, BASIC Windows, The Fast Assembler, Disk Disassembler, Off-Screen Trace
February—Lexitron, Snapshot, 128 Memory Map, Disk Editor, Custom Labels
March—Number Construction Set, Cataloger, 128 Auto Boot, ASCII Teleconverter
April—Turbo Copy, CP/M on the 128, Directory Filer, 128 Windows, Input Windows
May—Arcade Baseball, Vampyre Hunter, Klondike, Super Synth, Word Counter
June—Solarpix, Quick Key, FontMaker, Help Screens, 64 AutoBoot Maker
July—Saloon Shootout, Budget Planner, Math Worksheet, Sound Designer 128, CP/M Public Domain Software
August—Address Cataloger, TurboDisk 64, TurboDisk 128, Boldface, 128 Sprite Rotator
September—Ultrafont +, Video Jigsaw, Window Wizard, Fast File Copier, 80-Column Character Editor, DOS Window
October—Pig$ for Buck$, Ringside Karate, Menu System, 128 Sound and Music (Pt. 1)
November—Fill-64, 128 Instant Keywords, 1526 Underliner, Turbo Format, 128 Sound and Music (Pt. 2)
December—Q-Bird, Moon Rescue, The Animals' Show (128), Sprite Locater, Bar Charter, 128 Quicksort, 128 Sound and Music (Pt. 3)

1987

January—Keyword Construction Set, One-Touch Function Keys, GEOS Icon Changer, CP/M: Surviving with 40 Columns, 128 Sound and Music (Pt. 4)
February—Collision Course, Division Worksheet, MetaBASIC 64, MetaBASIC 128, 128 DOS Wedge, 128 Sound and Music (Pt. 5)
March—Ringside Boxing, Color Craft, 128 RAM Expansion, CP/M RAM Expansion, Sprite Manager
April—Omicron, Improvisor, *Print Shop* to GEOS, TurboSave 128, TurboSave 64, Countdown Timer
May—*SpeedScript* 3.2, Powerball, Cassette Sleeve Maker, No-SYS Loader, Fast Boot, Gameports
June—Play Bingo, Fraction Practice, Free-Form Filer, Disk Vacuum, Hi-Res Graphics on the 128
July—Basketball Sam & Ed, Calendar Maker, Crash Prevention, 128 Graph Designer, GEOS File Storage Format, Text Framer
August—Bounty Hunter, Sprite Magic, Sprite Stamp, 80-Column Disk Sector Editor (128), Relative Files
September—Sub Attack, Exercise Pacer, Screen Maker, Impossible Scroll, Video Slide Show (128), 80-Column Magic (128)
October—*SpeedScript 128*, Chopper Pilot, Stars: An Astronomical Simulation, Directory Magic, Font Printer, Animator 64
November—Litterbug, Sketch Pad, Poster Printer, Renumber 64, Accessing the 128's 80-Column Screen
December—Crossroads, Snake Pit, Word Find, Animal Match, Disk Rapid Transit, PrintScreen, GeoTrash Restorer

1988

January—How to Buy a Modem, Buyer's Guide to Modems, Needlework Graphics Editor, Tile Paint (128), Sound Manager
February—Buyer's Guide to Graphics Programs, Easy Load, Turbo *SpeedScript*, Fast 64 Mode for the 128
March—CP/M Software for the 128 (Pt. 1), XPressCard 128, ML Cloner, Big Screen, Color Lister
April—CP/M Software for the 128 (Pt. 2), 3-D Speedway, Speed File for the 64, Ramdisk 128, Mirrors
May—Networking the 64, Guide to User Groups (Pt. 1), Treasure Diver, Mob Maker, 128 Math Graphics, 1541 Speed and Alignment Tester
June—Buyer's Guide to Printers, Guide to User Groups (Pt. 2), Arcade Volleyball, Excelfont 80 (128), Graphics Wedge
July—Hard Disk Drives for the 64/128, Civil War on Disk, Quick Save, Error Analyzer, SYS Stamper
August—MIDI Made Simple, Buyer's Guide to Music Software, Cribbage (128), 128 Shell Booter, 3-D Sprites, Zoom
September—Write All About It! (desktop publishing), Pattern Fill, Multicolor Graphics Dump, SpeedCheck 128, Disk Package, MultiSort 128
October—Commodore Goes Back to School, Buyer's Guide to Preschool Software, Scorpion II, 64 Compressor, SpeedPrint, Speed Columns, 128 Text Sorter
November—GEOS 2.0: A Major Upgrade, Buyer's Guide to Word Processors and Spelling Checkers, Rally Racer, Block Out (128), Sprite Killer, Notepad 64, Font Grabber (GEOS)

FOR ORDER INFORMATION AND FORM, SEE PAGE 55.

Corresponding monthly disks are available only for issues from January 1986 forward.

John Elway's QUARTERBACK™

FOOTBALL THE WAY IT WAS MEANT TO BE PLAYED.

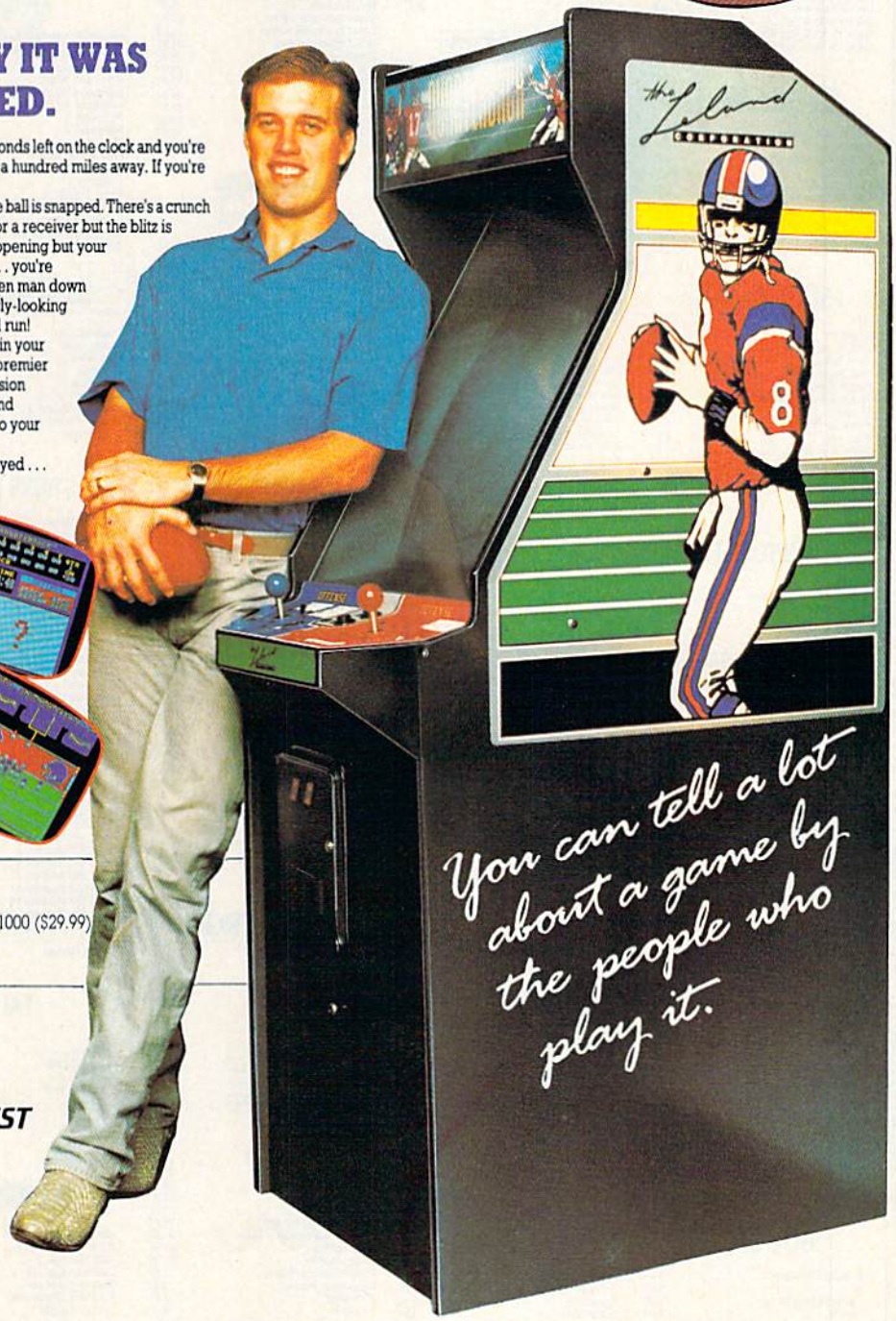
Third and ten on your own 30 yard line. Forty-three seconds left on the clock and you're down by two points. Suddenly the end zone seems to be a hundred miles away. If you're going to be a hero, now's the time. You call the play:

"Yellow-nineteen! Yellow-nineteen! Hut! Hut!! HUT!!!" The ball is snapped. There's a crunch of armor on the front line and you drop back. You look for a receiver but the blitz is on. Roll to the right – you keep dancing, you look for an opening but your blockers are starting to crumble. Keep pedalling back . . . you're in trouble now, you're too deep. But wait! You spot an open man down field! You cock back, ready to fire, when suddenly an ugly-looking tackle is all over you. Do you try and throw? Or duck and run!

Football action so real you can almost feel the pigskin in your hands. Designed under the watchful eyes of the game's premier quarterback – **John Elway** – this faithful computer version of the #1 arcade winner brings all the strategy and ground pounding excitement of the world's greatest sport right to your computer screen, one or two players!

Play big league football the way it was meant to be played . . . with QUARTERBACK!

Screen Shots taken from the IBM version.



You can tell a lot about a game by the people who play it.

AT A SOFTWARE STORE NEAR YOU

Now Shipping for: Commodore 64/128 ($29.99)
IBM PC and PS/2 and Tandy 1000 ($29.99)
Apple II series ($29.99)
Apple IIGS ($39.99)

MELBOURNE HOUSE

QUARTERBACK™ is a trademark of the Leland Corp., licensed from Tradewest.

TRADEWEST

Melbourne House, 711 West 17th Street, Unit G9, Costa Mesa, CA 92627. Tel. (714) 631-1001

HAPPY HOLIDAYS TO OUR MANY COMMODORE FRIENDS & CUSTOMERS

SOFTWARE SUPPORT INTERNATIONAL

CONVENIENCE—FAST SERVICE—RELIABILITY—SUPPORT

Abacus Software

128 Internals (book)	17.36
128 Tricks & Tips (book)	17.36
1571 Internals (book)	17.36
Basic Compiler 64	24.97
Basic Compiler 128	36.97
Becker Basic for Geos	33.97
Cad Pak 64	24.97
Cad Pak 128	36.97
Chart Pak 64	24.97
Chart Pak 128	24.97
Cobol 64	24.97
Cobol 128	36.97
CP/M for the C-128(book)	17.36
Super C Compiler 64	36.97
Super C Compiler 128	36.97
Super Pascal 64	36.97
Super Pascal 128	36.97
Geos Inside & Out Book	17.36
Geos Inside & Out Disk	12.76
Geos Tricks & Tips Book	15.20
Geos Tricks & Tips Disk	12.76

Access Software Incorporated

Echelon w/Lipstick	27.97
Heavy Metal	Call
LB & Tourn & Exec	13.97
Mach 5	21.97
Mach 128	30.97
Raid Moscow & Beachead 1&2	13.97
World Class Leader Board	24.97
W/C L/B Fam/Courses 1	12.97
W/C L/B Fam/Courses 2	12.97
W/C L/B Fam/Courses 3	12.97

Accolade

Apollo 18	18.97
Bubble Ghost	18.97
Card Sharks	18.97
Fast Break	18.97
Fourth & Inches	18.97
Fourth & Inches Team Const.	9.97
Miniputt	18.97
Power at Sea	18.97
Rack-em	18.97
Serve & Volley	18.97
T.K.O.	18.97
Test Drive	18.97
The Train	18.97

Absolute

Crossbow	21.97
F-18 Hornet	21.97
Space	21.97

Activision Entertainment Software

Aliens	21.97
Blackjack Academy	24.97
Faery Tales	30.97
Fire Power	15.97
Last Ninja	21.97
Main Frame	21.97
Maniac Mansion	21.97
Might & Magic	24.97
Might & Magic Hints	10.97
Predator	18.97
Rampage	21.97
Romantic Encounters	24.97
Sky Travel	30.97
USS Ocean Ranger	21.97

Softworks

Desk Pak I/Font Pak I/Geodex I	31.97
Desk Pak Plus*	18.97
Font Pack Plus*	18.97
Geos 64 V2.0	36.97
Geos 128	42.97
Geobasic	Call
Geocalc 64	30.97
Geocalc 128	42.97
Geofile 64	30.97
Geofile 128	42.97
Geoprogrammer 64	42.97
Geoprogrammer 128	42.97
Geopublish 64	42.97
Geospell	18.97
Geowriter's Workshop 64	30.97
Geowriter's Workshop 128	42.97

BOX OFFICE

$100,000 Pyramid	9.97
Alf	9.97
California Raisins	15.97
Psycho	15.97

Broderbund Software

Arcade Game Const. Set	18.97
Bank Street Writer	30.97
Bank Street Filer	18.97
Bank Street Mailer	15.97
Bank Street Speller	15.97
Carmen Sandiego Europe	24.97
Carmen Sandiego USA	24.97
Carmen Sandiego World	21.97
Downhill Challenge	15.97
Print Shop	27.97
Print Shop Companion	21.97
P/S Graphics Disk 1	15.97
P/S Graphics Disk 2	15.97
P/S Graphics Disk 3	15.97
P/S Holiday Graphics	15.97
Quest for Clues (book)	19.97
Star Wars	18.97
Toy Shop	18.97

CAPCOM

Ghosts & Goblins	18.97
Hat Trick	18.97
Minigolf	18.97
Side Arms	18.97
1942	18.97

CINEMAWARE

Defender of the Crown	21.97
King of Chicago	21.97
SDI	21.97
Sinbad	21.97
Rocket Ranger	21.97
Three Stooges	21.97
Warp Speed (Cart)	30.97

Data East

Breakthru	18.97
Commando	9.97
Ikari Warriors	18.97
Karate Champ	9.97
Karnov	18.97
Kid Niki	18.97
Kung Fu Master	9.97
Lock On	Call
Platoon	18.97
Speed Buggy	18.97
Tag Team Wrestling	13.97
Victory Road	18.97

DATASOFT

Alternate Reality:City	19.36
City Hint Book	7.97
Alternate Reality:Dungeon	25.48
Dungeon Hint Book	7.97
Cosmic Relief	16.30
Androids Decision	16.30
Firezone	16.30
Hunt For Red October	25.48
Video Title Companion 2	13.24
Video Title Shop w/Comp 1	19.36

Electronic Arts

Dictionary Disk	9.97
Digital Superpak 2	60.97
Pocket Filer 2	36.97
Pocket Planner 2	36.97
Pocket Writer 2	36.97

Alien Fires	19.36
Bard's Tale I	25.48
Bard's Tale I Hints	9.97
Bard's Tale II	25.48
Bard's Tale II Hints	9.97
Bard's Tale III	25.48
Bard's Tale III Hints	9.97
Caveman Ugh-lympics	19.36
Chessmaster 2000	25.48
Chuck Yeager's AFS	22.42
Deathlord	19.36
Deathlord Hints	9.97
Double Dragon	22.42
Earth Orbit Station	10.97
Instant Music	19.36
Jordan vs Bird One on One	19.36
Legacy of the Ancients	19.36
Marble Madness	10.97
Mars Saga	22.42
Mavis Beacon Typing	25.48
Modem Wars	22.42
Monopoly	19.36
PaperClip 3	31.60
PaperClip Publisher	31.30
Pegasus	19.36
Scrabble	21.40
Scruples	25.48
Skate or Die	19.36
Skyfox II	19.36
Strike Fleet	19.36
Twilights Ransom	22.42
Twilights Ransom Hints	7.97
Wasteland	25.48
Wasteland Hints	9.97

EPYX

Battleship	18.97
California Games	24.97
Champ. Wrestling	24.97
Create A Calendar	18.97
Destroyer	24.97
Fast Load Cartridge	24.97
Final Assault	24.97
4 X 4 Racing	24.97
The Games:Summer Edition	24.97
The Games:Winter Edition	24.97
Home Video Producer	30.97
Impossible Mission II	24.97
L.A. Crackdown	24.97
Legend of Black Silver	24.97
Metrocross	12.37
Mind Roll	24.97
Sporting News Baseball	24.97
Sports-A-Roni	15.97
Street Sports:Baseball	24.97
Street Sports:Basketball	24.97
Street Sports:Football	24.97
Street Sports:Soccer	24.97
Sub Battle Simulator	24.97
Summer Games II	12.97
Technocop	24.97
Tower Toppler	24.97
Winter Games	12.97
World Games	24.97

Firebird

Elite	11.97
Elite Hint Book (Leroy)	6.97
Guild of Thieves	24.97
Jinxter	21.97
Star Glider	24.97
Tracker	24.97

FIRST ROW

Honeymooners	24.97
Star Empire	15.97
Twilight Zone	24.97

GAMESTAR

Champ. Baseball	18.97
Champ. Basketball	21.97
GFL Football	21.97
Main Event	18.97
Star Rank Boxing II	18.97
Boxing I/Tennis	18.97

INKWELL

Flexidraw 5.5	24.06
Flexifont	20.76
Graphics Integrator 2	20.76
Light Pen (184C)	42.97
Graphics Gallery 1	20.75
Graphics Gallery 2	20.75

KONAMI

Boot Camp	18.97
Contra	18.97
Rush'N Space Attack	18.97
Yie Ar Kung Fu 2	18.97

MICRO PROSE

Airborne Ranger	21.97
Gunship	21.97
Pirates	24.97
Project Stealth Fighter	24.97
Red Storm Rising	24.97

Mindscape Inc.

Bad Street Brawler	18.97
Block Buster	18.97
Bop & Wrestle/Infiltrator 2	24.97
Captain Blood	21.97
Clubhouse Sports	18.97
Crossword Magic	30.97
Deja Vu	21.97
Eagles Nest/Infiltrator 1	24.97
Indy Jones/Temple of Doom	21.97
Misl Soccer	21.97
Road Runner	21.97
SuperStar Ice Hockey	21.97
SuperStar Soccer	21.97
Uninvited	21.97
Xevious	18.97

ORIGIN

Autoduel	33.36
Moebius	26.88
Ogre	20.40
Ultima 1	26.88
Ultima 3	26.88
Ultima 4	39.84
Ultima 5	39.84

PROFESSIONAL

Professional Software Inc.

Fleet System 2 +	36.97
Fleet System 4	48.97

SSI

Strategic Simulations Inc

Eternal Dagger	25.97
Gemstone Healer	10.97
Gemstone Warrior	10.97
Heroes of the Lance	19.47
Phantasie I	25.47
Phantasie II	25.47
Phantasie III	25.47
Pool of Radiance	25.47
Questron I	10.97
Questron II	25.47
Rings of Zilfin	25.47
Shard of Spring	25.47
Typhoon of Steel	31.97
Wargame Construction Set	19.47
Wizard's Crown	25.47

SHAREDATA

Concentration	9.95
Family Feud	9.95
High Rollers	9.95
Jeopardy	9.95
Jeopard Jr.	9.95
Wheel Of Fortune	9.95
Wheel of Fortune 2	9.95
Wheel of Fortune 3	9.95
Card Sharks	9.95

SOLUTIONS UNLIMITED

Billboard Maker	24.97
Grafix Link	12.97
Icon Factory	24.97
Photo Finish	18.97
Screen F/X	21.97

SPRINGBOARD

Certificate Maker	14.97
Certificate Maker Libr.I	10.97
Newsroom	14.97
Newsroom Clipart 1 or 2 or 3	10.97
P/S Graphic Expander	23.64

subLOGIC

Flight Simulator II	33.97
Flight Sim Scenery 1	14.16
Flight Sim Scenery 2	14.16
Flight Sim Scenery 3	14.16
Flight Sim Scenery 4	14.16
Flight Sim Scenery 5	14.16
Flight Sim Scenery 6	14.16
Flight Sim Scenery 7	17.46
Flight Sim Scenery 11	17.46
Flight Sim Scenery 14	17.46
Flight Sim Scenery Japan	17.46
Flight Sim Scenery SanFran	17.46
Jet 2	27.36
Stealth Mission	33.96

TAITO

Alcon	18.97
Arkanoid	18.97
Bubble Bobble	21.97
Gladiator	18.97
Operation Wolf	24.97
Qix	18.97
Sky Sharks	18.97
Rastan	21.97
Renegade	21.97

TimeWorks

Accounts Payable	33.36
Accounts Receivable	33.36
Data Manager 2	17.16
Data Manager 128	33.36
Desktop Publisher	39.84
Electronic Checkbook	13.92
General Ledger	33.36

TimeWorks

Inventory Management	33.36
Partner 64	33.36
Partner 128	39.84
Payroll Management	33.36
Swiftcalc/Sideways 64	17.16
Swiftcalc/Sideways 128	33.36
Sylvia Porter F/P 64	33.36
Sylvia Porter F/P 128	46.32
Word Writer 3	33.36
Word Writer 128	33.36

UNISON WORLD INCORPORATED

Art Gallery 1	15.97
Art Gallery 2	15.97
Art Gallery 4 Amer Hist	Call
Art Gallery 3	15.97
Printmaster Plus	21.97

MISCELLANEOUS

Art Worx/Bridge 5.0	21.97
Assembly for Kids (book)	13.76
Avalon Hill NBA Basketball	24.97
Basic 8	29.95
Beginner's Guide:Basic 8	19.95
Big Blue Reader 128/CP/M	27.97
Bob's Term Pro 64	30.97
Bob's Term Pro 128	36.97
B/W Business Form Shop	24.97
B/W Geos Word Publisher	24.97
Club Backgammon	20.40
CSM Drive Align Kit	30.12
CSM Protection Manual I	23.97
CSM Protection Manual II	27.97
Dark Castle (3-60)	21.97
Doodle	24.97
Flexfile 128	30.97
Font Master 2	30.97
Font Master 128	36.97
Geneology:Family Tree 64	36.97
Geneology:Family Tree 128	36.97
Geos Companion 1	18.97
Hes Mon 64 (cart)	9.95
IHT:CAD 3D	30.97
Lotto Program	24.95
Merlin Assembler 64	30.97
Merlin Assembler 128	42.97
Microlawyer	36.97
Microleague WWF Wrestling	24.95
MSD DOS Reference Guide	24.95
Paul Whitehead Chess	21.97
Sam's/C-64 Prog. Base Ref. Guide	16.97
Softsync Pers. Newsletter	36.97
Strip Poker	18.97
Poker Data Disk 1	12.97
Poker Data Disk 2	12.97
Poker Data Disk 3	12.97
Superbase 64	36.97
Superbase 128	42.97
Superbase the Book	13.97
Super Sunday	23.64
Superscript 64	30.97
Superscript 128	42.97
Tab Books/Adv 128 Grap/Snd	13.97
Tab Books/C64 Trouble Shoot	14.97
Tab Books/C64 Serious Prog	9.97
Vampire's Empire	18.97
Wizardry/Sir Tech	24.97
Wizardry 2	24.97

ACCESSORIES

1541/71 Serial Cable	4.95
1541/71 Power Cable	4.95
C-128 RGB Monitor Cable (color)	7.95
C-128 RGB Monitor Cable (comp)	5.95
C-64 Color Monitor Cord	4.95
C-64 Repairable Power Supply	39.95
C-128 Repairable Power Supply	49.95
RS-232 Interface (Omnitronics)	36.95
MW 350 Printer Interface	49.95
Aprospand 64	27.95
Aprospand Extender Cable	15.95
Aprotek 1200 Baud Minimodem	79.95
Commodore 1351 Mouse	37.95
Mouse Mat	8.95
1541 Dust Cover	8.95
1571 Dust Cover	8.95
C-64 Dust Cover	8.95
C-64C Dust Cover	8.95
C-128 Dust Cover	8.95
Disk Notcher-Square Cut	4.95
5.25" Disk Drive Cleaner	5.95
3.5" Disk Drive Cleaner	6.95
10 Cnt Disk Storage	1.95
50 Cnt Disk Storage	8.95
100 Cnt Disk Storage w/Lock	12.95
80 Cnt 3.5" Disk Stor. w/Lock	9.95
3.5" Disk Labels-25 cnt	1.00
5.25" Disk Labels-96 cnt	1.00
3.5" DS/DD Diskettes	1.29
5.25" DS/DD Diskettes-Black	.39
5.25" DS/DD Diskettes-10 colors	.79
Write Protects-100 cnt Black	1.00
Tyvek Sleeves-High Quality	ea .09
Slik Stik-Joystick	6.95
Quick Shot II-Joystick	7.95
Tac 2-Joystick	10.95
Tac 3-Joystick	11.95
Touch-It Static Strip	8.95
Suncom Icon Troller	17.95
Surge Protector/Power Pad	39.95

MANY OTHER C-64/128 TITLES AVAILABLE — CALL FOR PRICES!

ALL NEW

Introducing the 1541 RAMBOard

Copy protection's "worst nightmare"

The dream has been there for years now: an inexpensive piece of hardware that, when added to your system, would allow you to backup almost every single piece of software ever released for the C64.

Software Support has just made the dream a reality!

We're proud to introduce the 1541 RAMBOard, a small card that can easily be installed into your 1541/1541C disk drive in 5 minutes using just a screwdriver. With this powerful card in place, backup hassles are a thing of the past! Working with special software, the RAMBOard will backup software that other utilities can't even scratch the surface of. And as new protection schemes arrive, we'll create new parameters to keep your RAMBOard operating behind enemy lines.

RAMBOard also comes bundled with a fast copier that can archive an unprotected data disk in under 50 seconds!

The concepts behind "card" systems are public domain. So why should you have to pay $44.95 or more for someone else's "card"? Software Support will sell you the hardware* for just $26.95!!! So if you don't have an unlimited income, don't worry. Just order your new RAMBOard from Software Support -- the company that's declared war on high prices.

RAMBOard -- Our Price: $26.95

Other companies "card" boards: $44.95 or more.

*The 1541 RAMBOard requires software to operate. This software can be either RAMBOard parameters, soon to be found on our Renegade program disk, or any of the other "card" software already on the market.

NEW V2.0

RENEGADE

NEW V2.0

Here's what the world's toughest critics have to say.

If you think the toughest critics work for the magazines, you're wrong. The toughest critics are the people who actually use a program day in and day out. The people who depend on a program to do exactly what it says it will do. The people who pay out hard-earned money to buy a program — and who want to make sure they're getting their money's worth. The toughest critics aren't the people who review a program — they're the people who actually own the program.

Here's what some of those people have to say about Renegade:

- Thanks for (a) dream come true. *W.C., FL*
- We waited long enough! But, the best things come to (those) who wait. *C.P., CT*
- Very impressed!!! *T.W., MI*
- More than meets (my) expectations; great! *D.S., WI*
- Well worth the long wait!!!! *G.H., MO*
- Subscription service is a great innovation. *B.C., CA*
- Excellent! It's all I'll use! Keep up the good work. *J.D., NH*
- Finally, the last copier I'll need to buy!!!!!! *P.G., NC*
- Thanks for (your) user support! *A.S., TX*
- C64 owners have needed this for quite some time. *R.C., NY*

Renegade is a synthesis of the best utilities ever created by the best programmers ever assembled on a project of this nature. Not only is Renegade the only archival software a Commodore owner needs, it's so advanced it's now the only archival software we make. This means all our R&D effort goes into making sure that nothing else on the market comes close to Renegade's capabilities.

FEATURES INCLUDE:

- 1541/1581/1571 Fast File Copier-Any Direction
- Single or Dual State of the Art Nibbler
- GCR Editor: For the Experienced Hacker
- 300+ Parms: For those tough to backup disks
- Geos™ File Copier-Works under Desktop
- Capable of Archiving RapidLok Protection
- Error Scanner with Unique Sector Editor
- Popular subscriber service available!
- Single or Dual High Speed Data Copier
- Directory Editor: Organize your Disks
- Geos™ Modual: PARAMETERS and TOOLS
- Compatible with C-64/128 with 1541/71 Drives
- Dump Parameter Catalog to Printer
- Scrolling M/L Monitor with Drive Mon
- Byte Pattern Scanner: High Speed Searches
- Technical support available: of course

Renegade comes with over 300 parameters, and additional parameters are available every two months! Also, Renegade program updates are available to registered owners 3 times a year to ensure that Renegade will always be a step ahead of anything else on the market.

In the software industry, companies live and die by consumer opinion. Some companies have to learn the hard way that people won't take unlimited abuse for very long. But in this volatile market, there's one thing we know for certain -- there are a lot of awfully tough critics out there saying things about us. And at Software Support International, we're working hard to make sure they keep right on talking.

Attention: Registered Renegade owners!
Parameter Modual #3 is now available, Only $9.95
Renegade V2.0 Upgrade also available, Only $9.95

RENEGADE V2.0 with Parameter Moduals 1-3

Only $34.95

FLASH! Kracker Jax Earns a 5 Star Rating In INFO's May-June '88 Issue

Kracker Jax is the powerful parameter based copying system that has taken the country by storm! What IS a parameter? It's a custom program that allows your 1541 or 1571 disk drive to strip ALL copy protection from your expensive software, leaving you with UNPROTECTED, TOTALLY BROKEN BACKUPS that can even be copied with a simple fast copier!

We declare **Kracker Jax** to be the best system of its kind on the market today! A bold claim? Maybe.

But don't take our word for it—if you want the REAL story on how good **Kracker Jax** is just ask one of our customers. Don't worry. You won't have any problem finding one.

Vols 1 thru 7 **Only $9.95 each**

NEW LOW PRICE

ALL NEW

1581 TOOLKIT

When we program a utility, we DO IT RIGHT

Our customers demand the finest, so we can settle for no less. The 1581 TOOLKIT represents the finest set of disk utilities ever creaed for the 1581 disk drive. All of our routines are Ultra-Fast and represent state of the art programming. We support partitioning wherever applicable.

Features Include:

- Fast Copier (one or two drives): Backup over 800K in UNDER 2 MINUTES! This utility even reports errors.
- Fast File Copier (one or two drives): 1541/81/71 compatable - any direction - with partitioning.
- Track and Sector Editor: view and modify data easily on your 3 1/2 inch diskettes
- Directory Editor: organize whole disk directories or partitions - this tool is indespensible.
- Byte Pattern Search: We modified our famous utility to support the 1581 disk drive. You'll love it!
- Error Scanner: Scan important disks for possible problems. This is a one of a kind utility.
- File Track and Sector Tracer: Scan and modify files fast, Even supports partitioning.
- Fast Formatter: Allows fast formatting of either whole disks or ranges of tracks, you decide.
- Relocatable Fast Loader: Now you can fast load all your 1581 files with this super quick fast loader.
- Partition Creator: Open partitions easily with this simple to operate utility. Even a novice can use it.

And as if this weren't enough, included with each toolkit is our 1581 DOS Reference Manual. Over 100 pages of valuable inside information on your 1581 disk drive. Written by David Martin (INFO magazine's Copy Corner reviewer), this manual represents about a year of investigation and research results. Also included with your 1581 TOOLKIT is a variety of handy utilities, including an M/L monitor with Drive Mon, written especially for the 1581 DOS Reference Guide. We could go on and on, but the sooner you order the 1581 TOOLKIT, the sooner you'll experience the finest!

The 1581 TOOLKIT (on 3½" diskette) and 1581 DOS REFERENCE GUIDE

Only $39.95

ALL NEW

ATTENTION C-128 OWNERS

Now that Commodore has released the C-128D with 64K of video RAM, we should be seeing 128 programs address this fantastic new feature soon.

BASIC 8 already has the capability of using all 64K of video RAM. If you own the C-128 in stock condition, you own all 16K of video RAM that Commodore felt was necessary. Using Basic 8 format and the full 64K of video RAM provides you with the ability to scroll through video memory as well as enhanced color resolution.

Up until now, to upgrade the C-128 to 64K of video RAM you would have to first search out the components, then find a competent repair outlet to desolder and install the parts. **What a hassle!**

SOLUTION — We have developed a module that simply plugs in to the mother board of your C-128. **No splattered solder — No heat damage — No hassle.**

This package includes full easy to follow installation instructions, a test program to validate proper installation and the plug-in upgrade module.

Only $44.95

EDUCATIONAL SOFTWARE

CBS:
- Multiplication/Division 14.95
- Binomial Multiplication 14.95
- Linear Equations 14.95

Davidson:
- Algeblaster 30.97
- Math Blaster 30.97
- Spell It 30.97
- Word Attack 30.97

Designware:
- Body Transparent 18.97
- Designasaurus 21.97
- European Nations & Loc 18.97
- Mission Algebra 18.97
- Spellicopter 18.97
- Spellagraph 18.97

Learning Company:
- Gertrude's Secrets 24.97
- Magic Spells 24.97
- Reader Rabbit 24.97
- Rocky's Boots 30.97

Random House:
- Charlie Brown ABC's 9.97
- Peanuts Maze Marathon 9.97
- Peanuts Picture Puzzler 9.97
- Snoopy to the Rescue 9.97
- Snoopy's Writer 9.97
- Snoopy's Reading Machine 9.97
- Snoopy Sky Scrambler 9.97
- Typing is a Ball Charlie 9.97

Springboard:
- Early Games-Young Children 21.97
- Easy as ABC 13.97
- Piece of Cake Math 21.97

Unicorn:
- Decimal Dungeon 18.97
- Fraction Action 18.97
- Percentage Panic 18.97
- Race Car Rithmetic 18.97
- Ten Little Robots 18.97

Weekly Reader:
- Stickybear ABC's 18.97
- Stickybear Math 1 or 2 . . . . . 18.97
- Stickybear Numbers 18.97
- Stickybear Opposites 18.97
- Stickybear Reading 18.97
- Stickybear Spellgrabber 18.97
- Stickybear Typing 18.97
- Stickybear Vocabulary 18.97

ALL NEW

ATTENTION: SUPER SNAPSHOT OWNERS!

Now, you can expand the capabilities of your Super Snapshot cartridge. If you program in BASIC, you'll love the Eprom we have just for you. We have reprogrammed SYSRES, the classic BASIC programmer's tool to fit into your Super Snapshot Cartridge. No soldering or tools required. Just lift out the Super Snapshot Eprom and pop in Sysres. Instant access is yours. Sysres adds over 25 major commands to BASIC, and the extended DOS wedge is a pleasure to use. We even include a 1541/71 compatable fast loader, and an M/L monitor accessable from BASIC.

Your SYSRES package includes over one hundred pages of detailed documentation, and a disk based program, as well as an Eprom for your Super Snapshot Cartridge.

SYSRES - Still only $39.95

STOCKING STUFFERS (While They Last)

- Amnesia 6.95
- Arcade Four Pack 5.95
- Bureaucracy 128 . . . . . 9.95
- Candy Bandits 4.95
- Castle Wolfenstein 5.95
- Check Ease 64 . . . . . 4.95
- Computer Trivia 4.95
- Creative Filer 8.95
- Creative Writer 8.95
- Dan Dare 6.95
- Delta Patrol 6.95
- Desk Manager 64/128 . . . . . 8.95
- Educator 4.95
- The Elementary Commodore 64 . . . . . 6.95
- Entertainer 4.95
- File & Report-Better Work 7.95
- Gamemaker Sports Library 4.95
- Geos v1.2 . . . . . 9.95
- Heart of Africa 5.95
- Kitchen Manager 4.95
- Leather Goddess 9.95
- Money Savers I 4.95
- Money Savers II 4.95
- Norway '85 . . . . . 5.95
- Panzer Grenadier 5.95
- Personal Accountant CP/M 9.95
- Personal Inventory CP/M 9.95
- Pharoah's Curse 4.95
- Rocky Horror Show 6.95
- Sanxion 6.95
- Shamus II 4.95
- Space Sentinal 4.95
- Suspended 7.95
- Titanic 6.95
- Trinity 128 . . . . . 9.95
- World's Greatest Baseball 5.95

ALL NEW

KRACKER JAX REVEALED III

We've done it again!

Serious Commodore Users know why the Revealed Books by Kracker Jax are the last word in Commodore copy de-protection information. Our Knowledge of protection schemes has made us famous. Now find out how we do what we do best. Our books are your key to real knowledge. OTHERS ONLY SCRATCH THE SURFACE. We dig deep, much deeper. Not for the novice user, Kracker Jax Revealed Volume III takes you deep into the 1541 disk drive, where today's copy protection resides. If you have read and mastered the techniques set forth in Revealed I and II, you're ready for the next step - Kracker Jax Revealed III. Included as a free bonus is The Hacker's Utility Kit, one of the finest set of disk utilities gathered together in one package.

REVEALED BOOK III with Hacker's Utility Kit . . $23.50
REVEALED BOOK II with Hesmon Cartridge . . . $23.50
REVEALED BOOK I with Reset Board $23.50

SOFTWARE SUPPORT INTERNATIONAL

Ordering is simple: We accept money orders, certified checks, personal checks (of previous Software Support customers), VISA, M/C, Discover, and COD. Orders shipped to U.S.A., F.P.O., A.P.O., Canada, or Mexico, please add $3.00 per order for shipping and handling. COD available to U.S. customers only: add $2.25 additional per order. Foreign customers must call or write for exact shipping charges. Defective items are replaced at no charge IF and only IF you call for a Return Authorization Number. All in stock orders are processed within 24 hours. U.S. Shipping is by UPS ground in most cases. FAST 2nd DAY AIR available: add $1.00 per pound additional (U.S. 48 states only). U.S. software orders over 100 dollars will be shipped 2nd Day Air at our regular $3.00 S/H charge. Washington residents please add 7.5% additional for Sales Tax. All prices subject to change.

Program Submissions Invited
Need more info? Call or write for our free catalog.

Mail your order to: Software Support Int.
2700 NE Andresen Road / Vancouver, WA 98661

Or call our toll-free order line at 1-800-356-1179, 9am-5pm Pacific time Monday-Friday.
After hours orders accepted at (206) 695-9648 7 days a week.
Technical support available. Call (206) 695-9648, 9am-5pm Pacific time, Monday-Friday.

VISA MasterCard DISCOVER

DEALERS — WE HAVE THE SUPPORT YOU'RE LOOKING FOR!

QUICK!

Turn your 1541 disk drive into a real speed demon with this outstanding utility for the Commodore 64.

Adib Zaky

Although it's much faster than a tape drive, most people would agree that the 1541 disk drive is still slow. Several turbo loaders have been introduced to alleviate the problem. Unfortunately, some of them interfere with other devices attached to the serial bus, while others can't load certain programs because of timing problems. "Quick!" avoids such problems and speeds up both LOAD and VERIFY operations.

TYPING IT IN

Program 1, Quick!, is written in machine language, so it must be entered with MLX. When MLX prompts you, respond with the values given below.

Starting address: 9B00
Ending address: 9EFF

When you've finished typing, be sure to save a copy of the program with the name QUICK155. (The number 155 refers to the memory block at which Quick! starts.)

Program 2, "New Quick," is a BASIC program used to relocate Quick!. Type it in using "The Automatic Proofreader," included elsewhere in this issue. Save a copy of the program to disk with the name NEW QUICK.

GETTING STARTED

Quick! is easy to use. To load and activate it, you need three commands:

```
LOAD"0:QUICK155",8,1
NEW
SYS155*256
```

Once Quick! is activated, it changes the LOAD/VERIFY vector to point to itself. It remains active until it is disabled or until you press RUN/STOP–RESTORE. Reenable Quick! with the command SYS155*256.

Don't press RUN/STOP–RESTORE while Quick! is loading or verifying a file. Doing so will lock up your disk drive and could corrupt your disk. If you need to interrupt a load or verify operation, press RUN/STOP. To disable Quick!, type SYS155*256+3.

Quick! is transparent to the user. Use the LOAD and VERIFY commands as always. The only difference you'll notice is a blank screen and a shorter load time. Most programs work fine with Quick!.

HOW IT WORKS

Quick! first determines whether the requested operation is a disk-directory or tape operation; in either case, it passes control back to the ROM routines. Otherwise, Quick! inserts the filename into the disk drive program and writes both into the drive memory. When the program has loaded into the drive, Quick! displays a SEARCHING FOR *FILENAME* message. When the file is found, the screen blanks and the load or verify begins. In the case of a verify error, Quick! returns an error message and specifies the exact memory byte (not line number) at which the error occurs.

The following loading times were obtained in a rough test:

Length of file (blocks)	Quick! (sec.)	Normal LOAD (sec.)
5	3.5	5
20	6.0	15
30	7.0	21
60	10.5	40.5
126	18.8	83

Verify times show a similar improvement. The longer the program, the greater the advantage of Quick!. With a 126-block program, Quick! is more than four times as fast as the normal load routine.

MODEM PROMOTION

The Great Communicator

THE DIRECT-CONNECT HAYES® AND COMMODORE® 1670 COMPATIBLE 1200 BAUD MODEM FOR ONLY $74.95

Everything from Electronic Mail (E-mail) to stock quotes and huge databases of every imaginable type is now on line to the small computer owner. You can even send and receive messages anywhere in the world. All you need is a telephone and a modem which allows your computer to communicate with others.

Almost all modems (and services) are set up to communicate in one or more of three speeds; 300, 1200 and 2400 Baud. Most computer users prefer 1200 Baud. (1200 Baud is about 4 times as fast as 300 which means you spend about ¼ the time and money getting the data you want and more time enjoying it.)

2400's are great (but quite expensive). Most users can't justify the cost difference unless they do a large amount of modem work with a service that can handle 2400 baud.

You will also notice a few very cheap 1200s on the market at "too good to be true prices." They are. The reason is that they are usually foreign built and not truly Hayes® and Commodore 1670® compatible therefore not usable in all situations and with all services.

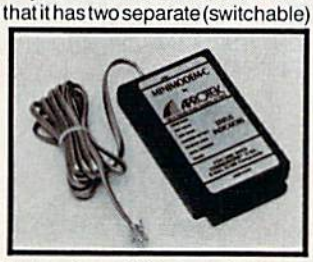
What is Hayes® compatibility? It's the industry standard and about all modem manufacturers have adopted the "AT" (Hayes) command set. Beware of those who don't. Virtually all software being written now uses Hayes commands. Be sure the modem you buy is truly Hayes® and Commodore 1670® compatible therefore usable in all situations and with all services.

Let's compare Minimodem-C™ with the 1670® , Avatex-e and Volks 6480®.

Comparison of	Minimodem-C™	vs. 1670®	vs. Avatex-e	vs. Volks 6480®
Hayes® Compatibility?	100%	Subset Only	Subset Only	None
Commodore direct Connect?	Yes	Yes	No	Yes
Number of Status Indicators	7	0	8	0
Busy Detect?	Yes	No	No	No
DTR Signal Support?	Yes	No	Yes	No
High Speed Detect Line?	Yes	No	No	No
Number of DIP Switches	8	3	8	0
Number of Status Registers	16	3	16	0
Guarantee	1 yr.	90 days	2 yrs.	5 yrs.

Now you have the FACTS to make an informed decision.

What do you get for $74.95? Everything! You don't need to worry about cables, compatibility or anything else! The Aprotek Minimodem-C™ plugs directly into your Commodore C-64, C-64C or C-128 USER port. It is unique in that it has two separate (switchable) emulation modes (Hayes and Commodore 1670®) to make it compatible with ALL available software. The Minimodem-C™ is a full feature, 300/1200 Baud modem with Auto Answer, Auto Dial, Touch-Tone or rotary dialing, has status indicators and a built-in speaker. Just plug it into your computer and standard phone jack with the attached cable. Minimodem-C™ is supplied with "Multiterm" 64 and 128, and a free trial subscription to Compuserve.



Do you have more than one computer or do you plan to get another computer? We have your solution. Simply order our new Com-Modem™ adapter (#5100) along with the standard Aprotek Minimodem-H™ which you can use with any computer that has a RS-232 serial port as well as with your Commodore. Aprotek Minimodems™ are tiny. Only 4¾" long, 2¾" wide and ¾" high. Our highly integrated, state-of-the-art circuitry makes this modem a Best Buy.

Built with pride in the USA and fully guaranteed for 1 year. Order yours today!

NO RISK POLICY

Try any Aprotek product for two weeks. If you are not satisfied, call us then send it back for a prompt refund.

NOW FOR THE BEST PART, THE PRICE!

Order –	Item	Qty	Price	Shipping	Total
6212	MINIMODEM-C (Commodore)	___	74.95	_____	_____
6214	MINIMODEM-H (RS-232) *	___	84.95	_____	_____
6216	MINIMODEM-AM (Amiga) *	___	84.95	_____	_____

*** (Specify Male or Female Connector)** _____

Modem shipping—Cont. US $6.00; UPS Blue, CAN, AK, HI, APO $10.00

Aprospand-64™

Gives your Commodore 64 or 128 full expandability! This superbly designed expansion module plugs into the expansion port and gives you four switchable expansion connectors—plus fuse protection—plus a reset button! Before you buy an expander, be sure that it has a fuse to protect your computer and that you can activate your cartridges in any combination allowed by the cartridges.

The Original

Fully C-128 Compatible

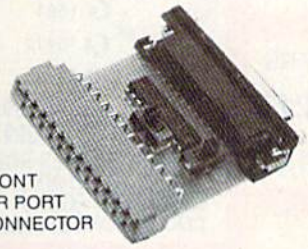
ONLY $29.95 + S&H **Order #5064**

UNIVERSAL RS-232 INTERFACE

with Commodore USER Port expansion. ONLY $39.95 + S&H

Now, you can connect and communicate with any of the popular RS-232 peripherals using your Commodore **USER** Port. This superb expander opens a whole new world to your Commodore computer's capabilities. You can now connect to printers, modems and any other RS-232 device. If you already have something that connects to the USER port, don't worry because the port is duplicated on the outside edge of the interface. Comes complete with sample driver program listings. Compatible with all Commodore home computers with a USER port. 1-year warranty. **Order #5232.**

NEW! "COM-MODEM" ADAPTER — Used only with any Hayes® compatible modem with DB-25 connector through your USER port. You can make it emulate a 1670 too, or turn it off entirely. Can be used with our other USER port equipment such as "USER EXTENDER" (#5250) or "UNIVERSAL RS-232 INTERFACE" (#5232).



FRONT USER PORT CONNECTOR

REAR DB-25 FEMALE CONNECTOR

Order #5100 . . . . . $19.95 + S&H

"USER EXTENDER" — 10" Ribbon cable extender for your Commodore USER port. **Order #5250 . . . . . $21.95 + S&H**

Com 6 Pin Serial Cable (5ft) #3006-5MM **$9.95,** (8ft) #3006-8MM **$11.95**
Commodore Serial Ext. (5ft) #3006-5MF **$9.95,** (8ft) #3006-8MF **$11.95**

Shipping per each above item: Cont. US = $3.Can, PR, HI, AK, APO, UPS Blue = $6

ORDER INFORMATION California residents add 6% tax. All prices are cash prices—VISA and MC add 3% to total. We ship the next business day on money orders, cashier's checks, and charge cards. A 14-day clearing period is required for checks. Prices and availability subject to change—CALL. **Available at Selected Dealers.** Dealer inquiries invited. **2 week satisfaction or your money back trial period on all products.**

For info and in California call **805/987-2454 (8–5 PST)**

TO ORDER CALL TOLL FREE

800-962-5800 - (7–6 PST)

Or send order to:

APROTEK

Dept. CG
1071-A Avenida Acaso
Camarillo, CA 93010

CELEBRATING OUR 20TH YEAR 1968-1988

MONTGOMERY GRANT

GAZZETTE 12/88

Retail Outlet: Penn Station, Main Concourse
(Beneath Madison Square Garden) NYC,N.Y.10001
Store Hours: Mon-Fri 8:30-8/Sat-Sun 9:30-7

OUTSIDE USA----CALL
(718)692-0071
FOR CUSTOMER SERVICE
Call Mon-Fri:9:30am-4:30pm
(718) 692-1148

FOR ORDERS & INFORMATION CALL TOLL FREE
1-800-759-6565

OR WRITE TO:
Montgomery Grant Mail Order Dept.
P.O. Box 58 Brooklyn,NY 11230

FAX NO. 7186923372
TELEX 422132 MGRANT

EXTENDED HOLIDAY SEASON ORDER HOURS: Monday - Friday, 8:30 - 8 / Saturday & Sunday, 9:30 - 7 (EST)
NO SURCHARGE FOR CREDIT CARD ORDERS / WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS / CORPORATE LEASING AVAILABLE

commodore

398

128D COMPUTER PACKAGES

SPECIAL!!

#1 C/128-D DELUXE PKG.

- C/128-D COMPUTER W/BUILT-IN DISK DRIVE
- 1902 RGB COLOR MONITOR
- COMPUTER PRINTER

$629

#2 C/128-D COMPLETE PKG.

- C/128-D COMPUTER W/BUILT-IN DISK DRIVE
- COMPUTER PRINTER
- 12"MONITOR

$519

399

COMMODORE PRINTERS

MPS-1250 **$219**

DPS-1101 DAISY WHEEL PRINTER **$149**

400

64C COMPUTER PACKAGES

#3 COMPLETE PACKAGE

- COMMODORE C-64/C COMPUTER
- COMMODORE 1541-C DISK DRIVE
- COMPUTER PRINTER
- 12" MONITOR
- GEOS SOFTWARE PROGRAM

$349

#4 COLOR PACKAGE

- COMMODORE C-64/C COMPUTER
- COMMODORE 1541/C DISK DRIVE
- COMPUTER PRINTER
- 13" COLOR MONITOR
- GEOS SOFTWARE PROGRAM

$478

401

64C With Geos Software **$139.95**

NEW C-128D with Built in Disk Drive **$415**

#1764 EXPANSION MODULE	$119.95
XETEC S. GRAPHIX JR. INTERFACE	$29.95
XETEC S. GRAPHIX SR. INTERFACE	$49.95
XETEC SUPER GRAPHIX GOLD	$79.95
C-128 POWER SUPPLY	$59.95
C64/C64-C POWER SUPPLY	$29.95
C-1660 MODEM	$19.95
1670 MODEM	$66.95
COMMODORE MOUSE	$26.88

XETEC LT. KERNEL 20MB. HARD DRIVES FOR

C64-C	$749
C-128	$799

XETEC 40 MB HARD DRIVE

C64/128 & 128D	$1169

402

commodore DISK DRIVES

1541/C	$149.95
1571	$229.95
1581	$184.95
1541II	$154.95

MONITORS

1702 COLOR.....$169.95
NEW 1084S.....$299.95
THOMSON HI-RES RGB COLOR MONITOR.....$299.95
MAGNAVOX RGB 13" COLOR MONITOR.....$199.95

403

AMIGA 500 RGB COLOR PACKAGE

Amiga 500 w/512K • Built-in 3.5" Disk Drive • Mouse RGB Color Monitor • All Power Supplies & Cables Free Software

$759

AMIGA 500

IN STOCK-CALL FOR LOW PRICE!

AMIGA 500 W/1084S.....$829
AMIGA 500 W/1084S & 1010 3.5" DRIVE...$1029

AMIGA 2000 IN STOCK

ALL PERIPHERALS IN STOCK

A-501 512K EXPANSION A-1010 3.5" FLOPPY DRIVE A-1020T 5.25" DISK DRIVE WITH TRANSFORMER A-2088D BRIDGE CARD A-1084S RGB COLOR MONITOR A-1680 MODEM A-2090 HARD DRIVE CONTROLLER FOR A-2000 A-2010 3.5" INTERNAL DISK DRIVE FOR A-2000 A-2052 2MB EXPANSION FOR A-2000

Supra 20MB Hard Drive for A-500.....$699

404

commodore COLT PACKAGE

COMMODORE COLT Computer • 640K 4.77-7.16MHz • 2 Floppy Disk Drives • 12" High Resolution Mono Monitor • All Hook Up Cables & Adapters • Box of 10 Diskettes

$719

405

LASER XT PACKAGE

IBM XT Compatible • 4.77-8 MHz. 360K Floppy • Parallel & Serial Ports Game Port/RGB Port • 12" Monitor

$489

406

SEAGATE 20, 30, 40, 60, 80 MB HARD DRIVES IN STOCK!

407

COMMODORE AMIGA 2000

RGB COLOR PACKAGE

A-2000 Computer w/Keyboard • 3.5" Disk Drive • Mouse • RGB Color Monitor • All Hook-up Cables & AC Adaptors • Free Mouse & Software

$1649

AMIGA 2000 IBM PC/XT COMPATIBLE RGB COLOR PACKAGE

A-2000 Computer w/Keyboard • 1 MB Exp. to 9 MB. • Built-in 3.5" Disk Drive • RGB Color Monitor • 2088 IBM Compatible Bridge Card w/5.25" Floppy Disk Drive

$2049

FREE MOUSE AND SOFTWARE

LEADING EDGE

408

LEADING EDGE MODEL D PACKAGE IBM PC/XT COMPATIBLE

512K RAM Computer • Keyboard • 360K Floppy Drive • 4.77-7.16 MHz. • 12" Monitor 8088.2 Processor

$629

W/20 MB HARD DRIVE	$889
W/30 MB	$939
W/40 MB	$989

EPSON

409

EPSON EQUITY II+

IBM AT Compatible Hard Drive Package

$1399

Keyboard 640K RAM 80286 Microprocessor • 1.2 MB Floppy Drive • 20 MB Hard Drive • Mono Monitor

LOGITECH MOUSE
M-7.....$59.95

PRINTERS

410

NEC

P-6	$419.95
P-2200	$339.95

TOSHIBA

PS-321 SL	$479.95

EPSON

FX-850	$339.95
FX-1050	$489.95
LQ-500	$315.95
LQ-850	$509.95
LQ-1050	$709.95
LX-800	$199.95

Panasonic

1080i-II	$159.95
1092i	$299.95
1091VII	$189.95
1524	$499.95
1595	$429.95

star

NX-1000C	$169.95
NX-1000C Rainbow	$224.95
NX-1000	$164.95
NX-1000 Rainbow	$219.95
NX-15	$299.95
NX-2400	$304.95
NB-2410	$409.95

OKIDATA

OKIDATA 120	$189.95
OKIDATA 180	$219.95
OKIDATA 183	$299.95
OKIMATE 20	$119.95
HP LASERJET SERIES II	$1629

CITIZEN PRINTERS IN STOCK!

NO SURCHARGE FOR CREDIT CARD ORDERS

WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS

RUSH SERVICE AVAILABLE..CALL FOR DETAILS

Certified Check, Bank Check, Approved P.O.'s, Money Orders, Visa, Am-Ex, Diners Club, Carl Blanchre, Discover Card & C.O.D.'s accepted. No additional surcharge for credit card orders. Non-certified checks must wait 4-6 weeks for clearance. N.Y. residents add applicable sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors. Return of defective merchandise must have prior return authorization number, or returns will not be accepted. IBM PC/XT are registered trademarks of International Business Machine Corp. APO/FPO orders please add 15% shipping & handling. All APO/FPO orders are shipped first class priority air. All orders can be shipped Air Express-call for details. NYC DCA #800233

MOVING QUICK

Quick! resides in blocks 155–158 ($9B00–$9E00) and uses block 159 ($9F00) for storage. If your program uses these blocks, you can change Quick!. The problem is that 6502 machine language is generally not relocatable. The solution is the BASIC program New Quick. New Quick creates a new version of Quick! (from an existing one) in any five-block area of memory.

To use New Quick, load Quick! and type NEW; then run New Quick. You are prompted for the source and destination blocks. At the prompt for the source block, enter the load address of Quick! divided by 256. At the prompt for the destination block, enter the new address divided by 256.

For example, if you wanted to create a version of Quick! that loads at block 202 from one that already exists at block 155, you'd answer the prompts as shown below:

```
SOURCE BLOCK(DEC)? 155
DESTINATION BLOCK? 202
```

You would need to enter both values as decimal numbers. (As you've probably noticed, Quick! must be located on an even 256-byte boundary.)

After New Quick has created the new Quick!, it asks whether you wish to save the new program. If you want to save the new version, press Y and type the filename. New Quick will save the new version of Quick!. (It's a good idea to name the files according to where they are located. For example, the original Quick! is stored with the filename QUICK155.)

When New Quick has finished, the new Quick! has been created at the desired location in memory and can be activated by the proper SYS command. If the new Quick! starts at block 192 ($C000), for example, it may be activated by typing SYS 192*256, or disabled by typing SYS 192*256+3.

INSIDE THE PROGRAM

Although Quick! is tolerant of errors, it isn't as tolerant as the Kernal ROM load and verify routines. A dirty or misaligned read/write head may cause Quick! to malfunction. If a program simply will not load with Quick! enabled, you can always disable Quick! and use the standard load routine.

Quick! actually consists of two programs—one in the computer and one in the disk drive. At the beginning of each load or verify operation, Quick! writes the disk drive subroutine, together with the filename, into blocks 5 and 6 of the drive's memory. This is followed by a "UC" command that causes the drive CPU to JMP to the beginning of the subroutine. The subroutine locates the desired file, reads its data from the disk, and transfers the data to the program in computer memory using a two-bit parallel technique.

Quick! is stable. It works perfectly well with a printer or other serial device connected to the serial bus. The reason is that it does not use the ATN line once the disk drive responds to the computer. The transfer of data is controlled by careful timing and proper manipulation of registers in the disk drive and computer. Because of its need for careful timing, Quick! can have trouble if sprites are turned on while it's loading. This is because sprite direct memory access (DMA) steals clock cycles from the microprocessor. To avoid this problem, turn off sprites during load and verify operations.

Quick! speeds up the load and verify operations, but it doesn't get involved in any other operations on files such as OPEN, PRINT#, GET#, INPUT#, or SAVE. Quick! also doesn't interfere with tape drives.

QUICK! AND *SPEEDSCRIPT*

Even though *SpeedScript* uses nearly every available byte of RAM, adapting it to use Quick! is easy. First, you need to use New Quick to create a copy of Quick! that starts at block 202. This is the highest block of RAM in which Quick! can execute. Next, you need to load *SpeedScript* (version 3.0 or higher) and type in the following line in direct mode:

```
POKE 2481,202:SAVE"0:filename",8
```

where *filename* is the name of the new *SpeedScript* file.

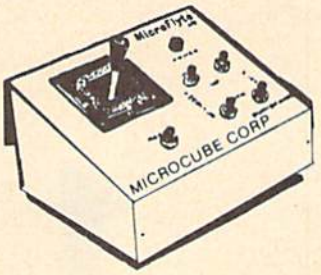
To use *SpeedScript* and Quick! together, simply load Quick! and activate it with the commands

```
LOAD"QUICK202",8,1
NEW
SYS202*256
```

Then, load and run *SpeedScript*.

See program listings on page 97.

NOW AVAILABLE FOR THE AMIGA



The MicroFlyte JOYSTICK, the only fully proportional continuously variable joystick control for Flight Simulator II

". . .It transforms an excellent program into a truly realistic flight simulation system" B.A.C.E.

MICROCUBE PRODUCTS

Commodore 64/128
- MicroFlyte ATC Joystick $59.95
- Test/Calibration Disk: A diagnostic tool for your joystick $4.95

Amiga
- MicroFlyte Joystick—Plugs into the mouse port & works with most software . $119.95
- Analog Joystick $59.95

Include $4.00 shipping of joystick orders. FSII is a trademark of subLOGIC Corp.

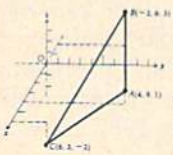
Order Direct from:

MICROCUBE CORPORATION
P.O. Box 488
Leesburg, VA 22075
(703)777-7157

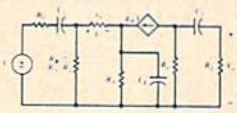
3 TECHNICAL PROGRAMS

Maximize: $Z = 2X_1 + X_2$
Subject to: $3X_1 + X_2 < 44$; $X_2 < 10$; $X_1 + X_2 < 18$; $2X_1 + 5X_2 < 60$

Linear Programmer
Solves linear programming problems of up to 50 variables and 35 constraints. Systems may be restricted by constraints of *equality, less than or greater than,* (different types may appear in the same problem). Objective (Z function) may be maximized or minimized. Computer displays solution (in example at left, Z=31, X_1=13, X_2=5). Initial and final tableaus. Special command for easy entry of sparse constraints.



Analytical Geometry in 3 Dimensions
Solves numerical geometry problems like those found in college level analytical geometry text books. After entering points, lines, planes and vectors, users may then calculate. Vector cross, dot, triple and scaler products. A×B, A•B, A×B•C, sA; find the angle between 2 lines, vectors or planes; find intersection of 3 planes, 2 planes, line and a plane; find a plane through 3 points, a point and a line, point and normal point and parallel plane, or perform 18 other geometric calculations. Entries made and answers displayed in users choice of several methods, including symetric equation, parametric equation, multiple points, direction and magnitude. (NOT A GRAPHICS PROGRAM)



Electronics: AC DC Circuit Analysis Programs
Program computes general numeric solution to electronic circuit of up to 40 nodes and 63 branches. Branches may contain resistors, capacitors, inductors, current sources, voltage sources or 4 types of controlled sources. Computer displays node voltages, branch voltages, currents, powers and power factors. Step function of branch parameters or frequency with graphic display of results. Menu controlled and user friendly.

Linear programming System (64/128)	$24.95
Analytical Geometry in 3 Dimensions (64/128)	$24.95
Electronics AC DC Circuit Analysis (64/128)	$29.95
Electronics AC DC Circuit Analysis (IBM PC)	$29.95

COMPUTER HEROES
P.O. Box 79 Dept. 224
Farmington, CT 06034
Orders Only 1-800-622-4070

1526 PRINTSCREEN

James Host

Would you like a hardcopy of your computer art? Looking for a way to make permanent records of your high scores? Try "1526 PrintScreen," a memory-resident screen dump that is activated by a simple key combination. It prints just about any screen the Commodore 64 can display. It works well with hi-res screens, text, custom characters, sprites (expanded or normal), and even extended-color background screens.

The 1526 version of PrintScreen works only with Commodore 1526 or MPS-802 printers. If you have a 1525 or an Epson-compatible printer, use "PrintScreen" from the December 1987 issue of *COMPUTE!'s Gazette*.

Typing It In

PrintScreen is written entirely in machine language. To enter it, you must use "MLX," the machine language entry utility. When MLX prompts you, respond with the values given below.

Starting address: 0801
Ending address: 0EE8

Follow the MLX instructions carefully, and be sure to save a copy of the 1526 PrintScreen data before exiting MLX. Although it is written in machine language, 1526 PrintScreen can be used just like a BASIC program.

This amazing machine language screen dump sends absolutely everything on your 64's screen to the printer—including hi-res graphics, sprites, and redefined character graphics. For Commodore 1526 or MPS-802 printers only.

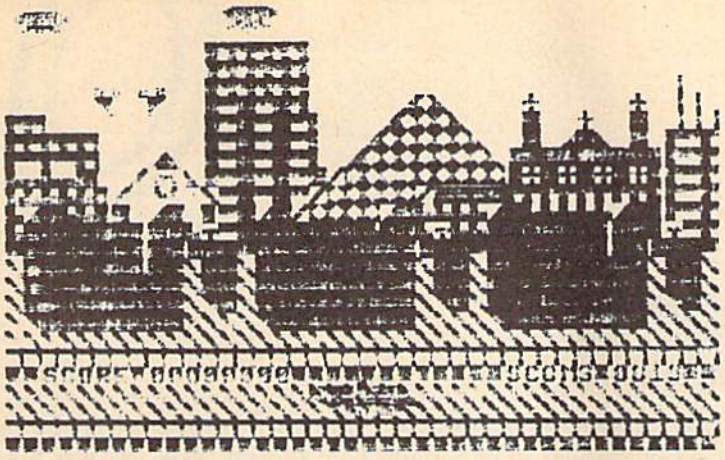
To use the program, just load it and type RUN. Next, load and run the program that creates the screen you would like to print. When you want to print the screen, hold down the Commodore key and tap RESTORE. The screen freezes. When you release the Commodore key, your screen will begin to print. (Note that the sprites will disappear from the screen during the screen dump, but they will be printed.) After the screen dump has finished, your program will continue running.

PrintScreen works with most BASIC and many machine language programs, but it does not work with programs that require the same areas of memory it uses: $CF00–$CFFF, the RAM beneath the I/O block and Kernal, and certain Page 3 vectors. PrintScreen interrupts whatever program is currently running, so it shouldn't be activated if the computer is accessing a disk drive or modem, or if it's already printing something.

Note that multicolor bitmapped screens and multicolor sprites appear as stripes in the printed dump. This is due to the way these images are stored in memory. Also, 1526 PrintScreen won't accurately reproduce screens which use raster interrupts to change graphic modes in midscreen.

Programming Notes

The 1526 printer does not support normal bitmapped graphics. PrintScreen prints graphics by defining a custom printer character and sending the eight bytes of character definition to a printer channel with the secondary address 5. Each byte sent defines an eight-dot column in the



This versatile utility can dump hi-res graphics, sprites, redefined characters, and text to a 1526 or MPS-802 printer.

custom character, with the high bit defining the action of the top pin of the printhead. (This dot-column scheme is opposite the 1525's, which uses the low bit to define the action of the top pin.) After the custom character has been defined, it is printed by sending CHR$(254) to a printer channel with a secondary address of 0 or 7.

The printer accepts only one custom character definition per printed line. To print a full line of graphics, PrintScreen tricks the printer into thinking that it has gone onto another line. This is done by printing CHR$(141) to printer channel 7. Following that, you can send another eight bytes of character definition to channel 5. Before printing the custom character CHR$(254) again, you have to move the printhead back to its previous position by printing an appropriate number of spaces.

This cycle—printing the custom character followed by the carriage return and spaces—causes the head to shuttle back and forth and explains why the 1526 screen dump is considerably slower than screen dumps for other printers.

Here's a short sample program that sends all the 256 printhead pin combinations to the printer:

```
KM 10 OPEN10,4,10:PRINT#10:CLO
      SE10
JE 20 OPEN6,4,6:PRINT#6,CHR$(2
      0);:CLOSE6
AH 30 OPEN5,4,5:OPEN7,4,7
BQ 40 FOR J=0 TO 31
SJ 50 PRINT#7,CHR$(141);
XR 60 FOR K=0 TO 7
CS 70 PRINT#5,CHR$(K+8*J);
PM 80 NEXT K
MF 90 FOR M=0 TO J+1
RP 100 PRINT#7," ";
QS 110 NEXT M
JD 120 PRINT#7,CHR$(254);
QS 130 NEXT J
RG 140 CLOSE5
BD 150 PRINT#7:CLOSE7
```

See program listing on page 96.

COMPUTE!'s MOST POPULAR PROGRAM EVER!

COMPUTE!'s
SpeedScript
Disk

A powerful word processing package for 64 and 128 owners

only $9.95

A Great Deal for Commodore Users!

Includes:
- *SpeedScript* for the 64
- *SpeedScript 128*—80-column version
- Spelling checkers for both 64 and 128 versions
- Plus more than a dozen other *SpeedScript* support utilities, including mail merge and word count—all on one disk (including full documentation).

ORDER NOW!

YES! Send me _____ copies of COMPUTE!'s *SpeedScript* Disk.
I've enclosed $9.95 plus $2 postage and handling for each copy.

_____ Amount
_____ Sales Tax*
_____ Total

Name _____

Address _____

City _____ State _____ ZIP _____

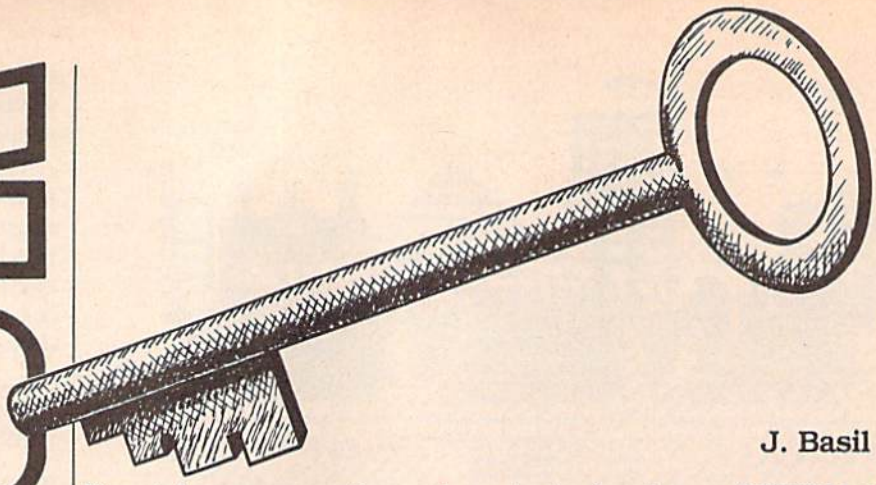
Mail personal check or money order to:

COMPUTE!'s *SpeedScript* Disk
P.O. Box 5188
Greensboro, NC 27403

*New York residents add 8¼ percent sales tax. North Carolina residents add 5 percent sales tax. All orders must be paid in U.S. funds by a check drawn on a U.S. bank. Sorry, no credit card orders accepted.

Please allow 4–6 weeks for delivery.

KEY LOCK



J. Basil Cox

Protect your work from prying eyes and mischievous fingers. "Key Lock" adds simple but powerful password security to 64 or 128 programs. As a bonus, this utility also offers an instant-freeze feature.

If you take your computing seriously, "Key Lock" can be an important ally. It lets you put a software lock on your computer; no one can alter your work without the secret password.

Key Lock has another handy feature. It can be used to freeze just about any program. Use it to pause fast-action games or to stop BASIC program listings from scrolling off the screen. This utility stays in the background until you activate it.

Getting Started

There are two separate versions of Key Lock: Program 1 for the 64 and Program 2 for the 128. Type in the version for your machine. Both versions are written in machine language, so you must use the appropriate version of "MLX" for your computer. (The 64 version of MLX is found elsewhere in this issue; the 128 version, published frequently in this magazine, can be found in last month's issue.) The MLX prompts for the 64 version, and the values you should type in, are as follows:

```
Starting address:  CE00
Ending address:    CFCF
```

For Key Lock 128, respond to the 128 MLX prompts with these values:

```
Starting address:  00C00
Ending address:    00DE7
```

To use the 64 version, type LOAD "filename",8,1. After the program has loaded, type NEW and SYS 52736. To run the 128 version, type BLOAD"filename", then SYS 3072, and finally NEW.

To use Key Lock, press Commodore–RESTORE to activate the password feature. Type in your password (maximum of nine characters) and press RETURN. In the 64 version, you can use the DEL key and cursor keys to edit your input. These keys clear the input in the 128 version. Key Lock then asks you to confirm the password. If it isn't what you wanted, press *n* to reenter it.

The screen border turns dark blue—your computer is locked. There are only two ways of unlocking the computer: by typing in the password or by turning off the computer. If you enter an incorrect password, the border turns red. After the correct password is entered, the computer returns to its former task.

Press SHIFT–RESTORE to pause the computer. To get it going again, press the space bar.

Technical Considerations

The 64 version of the program is compatible with programs that do not use memory locations $CE00–$CFFF. Screen and color memory are temporarily stored under BASIC ROM ($A000–$A7FF). This means Key Lock will work with most BASIC programs and many ML programs. Key Lock 128 uses the RS-232 buffer and 2K of memory at 4864 ($1300). The 128 version does not work with high-resolution graphics modes or the 80-column display.

Key Lock works by changing the NMI (NonMaskable Interrupt) vector. Pressing the RESTORE key generates an NMI. To disable Key Lock, press RUN/STOP–RESTORE (this does not work when the password or pause is activated). To reenable it, use SYS 52736 on the 64 and SYS 3072 on the 128.

See program listings on page 90.

Power BASIC:
Program Merge

Article on page 57.

```
HE 10 REM COPYRIGHT 1988 COMPU
      TE! PUBLICATIONS, INC. -
       ALL RIGHTS RESERVED
RH 20 PRINT"{CLR}{3 SPACES}COP
      YRIGHT 1988 COMPUTE! PUB
      ., INC."
SH 30 PRINTTAB(11)"ALL RIGHTS
      {SPACE}RESERVED":SA=4915
      2
QH 40 V1=SA+96:H1=INT(V1/256):
      L1=V1-H1*256:V2=SA+197:H
      2=INT(V2/256):L2=V2-H2*2
      56
JX 50 FORI=SATOSA+234:READD:CK
      =CK+D:POKEI,D:NEXT
FM 60 IFCK<>29233THENPRINT"***
       ERROR IN DATA STATEMENT
      S ***":END
DQ 70 POKESA+28,L1:POKESA+33,H
      1:POKESA+38,L2:POKESA+43
      ,H2
QS 80 PRINTCHR$(147);"PROGRAM
      {SPACE}MERGE INSTALLED A
      T";SA:END
KG 90 REM MACHINE LANGUAGE DAT
      A
CR 100 DATA 32,231,255,173,2,3
       ,141,235
KA 110 DATA 192,173,3,3,141,23
       6,192,173
SA 120 DATA 44,3,141,237,192,1
       73,45,3
AK 130 DATA 141,238,192,169,96
       ,141,2,3
BE 140 DATA 169,192,141,3,3,16
       9,197,141
JJ 150 DATA 44,3,169,192,141,4
       5,3,32
HS 160 DATA 212,225,165,186,20
       1,8,144,91
DS 170 DATA 169,1,166,186,160,
       3,32,186
CJ 180 DATA 255,32,192,255,32,
       175,245,162
MS 190 DATA 1,32,198,255,32,22
       8,255,32
AS 200 DATA 228,255,32,183,255
       ,201,0,208
QP 210 DATA 58,169,202,160,192
       ,32,30,171
QS 220 DATA 162,1,32,198,255,3
       2,228,255
DQ 230 DATA 32,228,255,32,183,
       255,201,0
SR 240 DATA 208,40,32,228,255,
       133,20,32
SF 250 DATA 228,255,133,21,169
       ,5,141,239
KK 260 DATA 192,32,228,255,172
       ,239,192,153
GD 270 DATA 251,1,201,0,240,47
       ,238,239
BJ 280 DATA 192,208,238,169,21
       1,160,192,32
PA 290 DATA 30,171,173,235,192
       ,141,2,3
EH 300 DATA 173,236,192,141,3,
       3,173,237
EJ 310 DATA 192,141,44,3,173,2
       38,192,141
AF 320 DATA 45,3,169,1,32,195,
       255,32
HK 330 DATA 204,255,76,116,164
       ,132,11,32
HX 340 DATA 19,166,76,167,164,
       169,1,76
FX 350 DATA 49,243,13,77,69,82
       ,71,73
KK 360 DATA 78,71,0,13,63,70,7
       3,76
HG 370 DATA 69,32,78,79,84,32,
       70,79
AK 380 DATA 85,78,68,32,32,69,
       82,82
PQ 390 DATA 79,82,0
```

Digi-Sound

Article on page 70.

Program 1: Digi-Sound—64 Version

```
HE 10 REM COPYRIGHT 1988 COMPU
      TE! PUBLICATIONS, INC. -
       ALL RIGHTS RESERVED
EF 20 PRINTCHR$(14)CHR$(8)CHR$
      (147):POKE53280,0:POKE53
      281,0
RA 30 PRINTTAB(12)"{BLU}COPYRI
      GHT 1988":PRINTTAB(7)"CO
      MPUTE! PUBLICATIONS, INC
      ."
MH 40 PRINTTAB(10)"ALL RIGHTS
      {SPACE}RESERVED":FORI=1T
      O1000:NEXT
KF 50 FORI=49152TO49333:READA:
      POKEI,A:X=X+A:NEXT
XQ 60 IFX<>27127THENPRINT"
      {DOWN}ERROR IN DATA STAT
      EMENTS.":STOP
KD 70 PRINT"{CLR}{YEL}{3 DOWN}
      ";TAB(12);"DIGI-SOUND 64
       {2 DOWN}"
BB 80 PRINT"{4 RIGHT}{YEL}
      {RVS} 1 {OFF}{BLU} RECOR
      D{DOWN}":PRINT"{4 RIGHT}
      {YEL}{RVS} 2 {OFF}{BLU}
      {SPACE}PLAYBACK{DOWN}"
QE 90 PRINT"{4 RIGHT}{YEL}
      {RVS} 3 {OFF}{BLU} SAVE
      {SPACE}SAMPLE TO DISK
      {DOWN}"
GJ 100 PRINT"{4 RIGHT}{YEL}
       {RVS} 4 {OFF}{BLU} LOAD
       SAMPLE FROM DISK{DOWN}
       "
KM 110 PRINT"{4 RIGHT}{YEL}
       {RVS} 5 {OFF}{BLU} SAMP
       LE CONTINUOUSLY FROM TA
       PE{DOWN}":PRINT"
       {4 RIGHT}{YEL}{RVS} 6
       {OFF}{BLU} QUIT"
QD 120 PRINTTAB(13)"{2 DOWN}EN
       TER (1-6)"
GX 130 GETA$:IFA$=""THEN130
BJ 140 A=VAL(A$):ONAGOSUB150,1
       80,190,230,260,320:GOTO
       70
QK 150 PRINT"{2 DOWN}{YEL}
       {5 SPACES}PRESS PLAY ON
       YOUR DATASETTE."
AM 160 IFPEEK(1)=55THEN160
SS 170 SYS49223:RETURN
JX 180 SYS49152:RETURN
GR 190 GOSUB330
CF 200 POKE187,PEEK(71):POKE18
       8,PEEK(72):P=PEEK(187)+
       256*PEEK(188):POKE183,P
       EEK(P)
FB 210 POKE187,PEEK(P+1):POKE1
       88,PEEK(P+2):POKE251,0:
       POKE252,16:POKE185,1
JQ 220 POKE186,D:POKE780,251:P
       OKE781,69:POKE782,192:S
       YS65496:RETURN
DX 230 GOSUB330
JQ 240 LOADF$,D,1
SG 250 RETURN
PH 260 PRINT"{DOWN}{YEL}{RVS}N
       OTE:{OFF} YOU MUST RE-R
       UN THE PROGRAM WHEN "
KP 270 PRINT"FINISHED. PRESS P
       LAY ON DATASETTE WHEN"
GJ 280 PRINT "READY OR PRESS A
       NY KEY TO CANCEL."
BK 290 GETA$:IFA$<>""THEN70
FB 300 IFPEEK(1)=119THEN290
JQ 310 SYS49296
CS 320 PRINTCHR$(9):POKE53280,
       14:POKE53281,6:PRINT"
       {73}{CLR}":END
RX 330 INPUT"{YEL}{2 DOWN}ENTE
       R DEVICE NUMBER: ";D
KM 340 INPUT"{YEL}ENTER FILENA
       ME: ";F$:F$=LEFT$(F$,14
       ):RETURN
SJ 350 DATA 169,11,141,17,208,
       234,234,234,120,160,0,1
       69,16,132,63,133,64,234
       ,177
CC 360 DATA 63,170,202,234,234
       ,234,224,0,208,248,201,
       0,240,15,169,15,141,24,
       212
CF 370 DATA 234,234,234,234,23
       4,169,0,141,24,212,200,
       208,223,230,64,165,64,2
       01
KE 380 DATA 160,144,215,88,169
       ,27,141,17,208,234,234,
       234,96,234,234,169,11,1
       41,17
HD 390 DATA 208,234,234,234,12
       0,160,0,169,16,132,63,1
       33,64,234,173,13,220,20
       1,16
DM 400 DATA 208,19,138,145,63,
       162,0,200,208,241,230,6
       4,165,64,201,160,144,23
       3,76
PJ 410 DATA 132,192,232,208,22
       7,138,145,63,200,208,22
       1,230,64,165,64,201,160
       ,144
FA 420 DATA 213,88,169,27,141,
       17,208,234,234,234,96,2
       34,234,169,11,141,17,20
       8,234
HX 430 DATA 234,234,120,173,13
       ,220,197,236,240,249,20
       1,16,208,10,169,15,141
EM 440 DATA 24,212,133,236,76,
       153,192,169,0,141,24,21
       2,76,169,192,200
```

Program 2: Digi-Sound—128 Version

```
HE 10 REM COPYRIGHT 1988 COMPU
      TE! PUBLICATIONS, INC. -
       ALL RIGHTS RESERVED
CE 20 BANK15:COLOR0,1:COLOR4,1
      :PRINTCHR$(14)"{CLR}
      {3 SPACES}{BLU}COPYRIGHT
       1988 COMPUTE! PUB., INC
      ."
CS 30 PRINTTAB(11)"ALL RIGHTS
      {SPACE}RESERVED"
HJ 40 FORI=1TO397:READA:X=X+A:
      NEXT:IFX<>56992THENPRINT
      "{DOWN}ERROR IN DATA STA
      TEMENTS.":STOP
GF 50 FORY=0TO1:RESTORE:BANKY:
      FORX=9728TO9826:READA:PO
      KEX,A:NEXT:FORX=9952TO99
      83:READA:POKEX,A:NEXT:FO
      RX=64000TO64265:READA:PO
      KEX,A:NEXT:NEXT
XH 60 PRINT"{CLR}{DOWN}{YEL}"T
```

```
      AB(11)"DIGI-SOUND 128"
AE 70 PRINT"{2 DOWN}{4 RIGHT}
      {YEL}{RVS} 1 {OFF}{BLU}
      {SPACE}RECORD{DOWN}":PRI
      NT"{4 RIGHT}{YEL}{RVS} 2
       {OFF}{BLU} PLAYBACK
      {DOWN}":PRINT"{4 RIGHT}
      {YEL}{RVS} 3 {OFF}{BLU}
      {SPACE}SAVE SAMPLE TO DI
      SK{DOWN}":PRINT"
      {4 RIGHT}{YEL}{RVS} 4
      {OFF}{BLU} LOAD SAMPLE F
      ROM DISK{DOWN}"
DS 80 PRINT"{4 RIGHT}{YEL}
      {RVS} 5 {OFF}{BLU} SAMPL
      E TAPE CONTINUOUSLY
      {DOWN}":PRINT"{4 RIGHT}
      {YEL}{RVS} 6 {OFF}{BLU}
      {SPACE}DISK DIRECTORY
      {DOWN}":PRINT"{4 RIGHT}
      {YEL}{RVS} 7 {OFF}{BLU}
      {SPACE}END{2 DOWN}":PRIN
      TTAB(11)"{YEL}ENTER (1-7
      )"
SA 90 GETKEYA$:A=VAL(A$):ONAGO
      SUB100,130,140,160,180,2
      10,220:GOTO60
PR 100 PRINTTAB(8)"{DOWN}{YEL}
      PRESS PLAY TO BEGIN"
ER 110 IFPEEK(1)=115THEN110
CJ 120 BANK0:FAST:SYS64141:SLO
      W:RETURN
FB 130 BANK0:FAST:SYS64000:SLO
      W:RETURN
GG 140 INPUT"{YEL}{2 DOWN}FILE
      NAME ";F$:F$=LEFT$(F$,1
      4)
AG 150 BSAVE(F$),B0,P9728TOP64
      139:BSAVE(F$+".2"),B1,P
      9728TOP64139:RETURN
SH 160 INPUT"{YEL}{2 DOWN}FILE
      NAME ";F$:F$=LEFT$(F$,1
      4)
QG 170 BLOAD(F$),B0,P9728:BLOA
      D(F$+".2"),B1,9728:RETU
      RN
PP 180 PRINTTAB(8)"{DOWN}{YEL}
      PRESS PLAY TO BEGIN"
FS 190 IFPEEK(1)=115THEN190
BD 200 BANK15:FAST:SYS9792
SH 210 PRINT"{CLR}{YEL}":DIREC
      TORY:SLEEP4:RETURN
AJ 220 PRINT"{CLR}{6}":COLOR0,
      12:COLOR4,14:PRINTCHR$(
      9):END
HD 230 DATA 72,169,0,141,0,255
      ,104,141,24,212,169,63,
      141,0,255,96,72,169,0,1
      41,0,255,104,141,24,212
      ,169,127,141,0,255,96,1
      69,0,141,0,255,173,13,2
      20,72,169,63,141
QA 240 DATA 0,255,104,96,169,0
      ,141,0,255,173,13,220,7
      2,169,127,141,0,255,104
      ,96,169,11,141,17,208,1
      20,173,13,220,197,236,2
      40,249,201,16,208,10,16
      9,15,141,24,212
CP 250 DATA 133,236,76,70,38,1
      69,0,141,24,212,76,86,3
      8,169,0,141,0,255,169,1
      1,141,17,208,169,63,141
      ,0,255,96,169,0,141,0,2
      55,169,27,141,17,208,16
      9,63,141,0,255
SP 260 DATA 96,32,224,38,120,1
      60,0,169,39,132,160,133
      ,161,234,177,160,170,20
      2,234,234,234,234,234,2
      34,234,234,234,234,234,
      234,234,234,234,234,234
      ,234,224,0,208
PF 270 DATA 233,201,0,240,10,1
      69,15,32,0,38,169,0,32,
      0,38,200,208,213,230,16
      1,165,161,201,250,144,2
      05,169,127,141,0,255,16
      0,0,169,39,132,160,133,
      161,234,177
EX 280 DATA 160,170,202,234,23
      4,234,234,234,234,234,2
      34,234,234,234,234,234,
      234,234,234,234,234,224
      ,0,208,233,201,0,240,10
      ,169,15,32,16,38,169,0,
      32,16,38,200,208
HJ 290 DATA 213,230,161,165,16
      1,201,250,144,205,169,6
      3,141,0,255,88,32,240,3
      8,96,234,234,32,224,38,
      120,160,0,169,39,132,16
      0,133,161,32,32,38,201,
      16,208
XC 300 DATA 19,138,145,160,162
      ,0,200,208,241,230,161,
      165,161,201,250,144,233
      ,76,196,250,232,208,227
      ,138,145,160,200,208,22
      1,230,161,165,161,201,2
      50,144
XQ 310 DATA 213,169,127,141,0,
      255,160,0,169,39,132,16
      0,133,161,32,48,38,201,
      16,208,19,138,145,160,1
      62,0,200,208,241,230,16
      1,165,161,201,250,144,2
      33
AK 320 DATA 76,0,251,232,208,2
      27,138,145,160,200,208,
      221,230,161,165,161,201
      ,250,144,213,201,250,14
      4,209,169,63,141,0,255,
      88,32,240,38,96
```

Key Lock

See instructions in article on page 88 before typing in.

Program 1: Key Lock—64 Version

```
CE00:AD 18 03 8D 7C CF AD 19 4B
CE08:03 8D 7D CF A9 17 8D 18 14
CE10:03 A9 CE 8D 19 03 60 48 2A
CE18:AD 8D 02 8D E3 CF C9 02 FC
CE20:F0 08 C9 01 F0 04 68 6C 56
CE28:7C CF 8A 48 98 48 78 A9 4E
CE30:7E 8D 18 03 A9 CF 8D 19 64
CE38:03 38 20 F0 FF 8C CB CF 12
CE40:8E CC CF AD 20 D0 8D CD 5A
CE48:CF 20 34 CF AE E3 CF E0 DE
CE50:02 F0 10 20 F9 CE 20 9F 1A
CE58:FF 20 E4 FF C9 20 D0 F6 02
CE60:4C D5 CE 20 F2 CE A0 00 89
CE68:20 CF FF C9 0D F0 0B C0 A9
CE70:0A F0 07 99 CE CF C8 4C 5D
CE78:68 CE A9 00 99 CE CF A9 84
CE80:B0 A0 CF 20 1E AB A9 CE 5C
CE88:A0 CF 20 1E AB 20 9F FF 6D
CE90:20 E4 FF C9 59 F0 07 C9 7A
CE98:4E D0 F2 4C 63 CE A9 06 64
CEA0:8D 20 D0 20 F2 CE A0 00 3D
CEA8:20 CF FF C9 0D F0 0B C0 E9
CEB0:0A F0 07 99 D9 CF C8 4C F5
CEB8:A8 CE A2 00 BD CE CF F0 6C
CEC0:14 DD D9 CF D0 04 E8 4C CC
CEC8:BC CE A9 02 8D 20 D0 20 7C
CED0:F2 CE 4C A6 CE AD CD CF 28
CED8:8D 20 D0 20 F9 CE 18 AC 49
CEE0:CB CF AE CC CF 20 F0 FF DB
CEE8:20 0C CE 68 A8 68 AA 68 9E
CEF0:58 40 A9 7F A0 CF 4C 1E F2
CEF8:AB 20 73 CF B9 00 A0 99 88
CF00:00 04 B9 FA A0 99 FA 04 EC
CF08:B9 F4 A1 99 F4 05 B9 EE AD
CF10:A2 99 EE 06 B9 00 A4 99 56
CF18:00 D8 B9 FA A4 99 FA D8 2F
CF20:B9 F4 A5 99 F4 D9 B9 EE 99
CF28:A6 99 EE DA C8 C0 FA D0 1D
CF30:CB 4C 6C CF 20 73 CF B9 7B
CF38:00 04 99 00 A0 B9 FA 04 F1
CF40:99 FA A0 B9 F4 05 99 F4 FE
CF48:A1 B9 EE 06 99 EE A2 B9 EC
CF50:00 D8 99 00 A4 B9 FA D8 34
CF58:99 FA A4 B9 F4 D9 99 F4 EA
CF60:A5 B9 EE DA 99 EE A6 C8 6B
CF68:C0 FA D0 CB A5 01 09 01 42
CF70:85 01 60 A5 01 29 FE 85 A9
CF78:01 A0 00 60 00 00 40 93 DA
CF80:20 20 20 20 20 20 20 20 20
CF88:20 4B 45 59 20 4C 4F 43 5D
CF90:4B 20 41 43 54 49 56 41 EF
CF98:54 45 44 0D 0D 0D 0D 45 09
CFA0:4E 54 45 52 20 59 4F 55 A4
CFA8:52 20 4B 45 59 20 3E 00 FE
CFB0:93 11 20 43 4F 4E 46 49 20
CFB8:52 4D 20 50 41 53 53 57 33
CFC0:4F 52 44 20 28 59 2F 4E 7A
CFC8:29 3F 00 00 00 00 00 00 CC
```

Program 2: Key Lock—128 Version

See instructions in article on page 88 before typing in.

```
0C00:AD 18 03 8D BE 0D AD 19 CC
0C08:03 8D BF 0D A9 17 8D 18 AA
0C10:03 A9 0C 8D 19 03 60 A5 A9
0C18:D3 C9 02 F0 07 C9 01 F0 2E
0C20:03 6C BE 0D 78 8D F6 0D 72
0C28:AD 27 0A 48 A9 3D 8D 18 1C
0C30:03 8D 27 0A A9 0D 8D 19 68
0C38:03 A9 00 8D 00 FF 38 20 A5
0C40:F0 FF 8C DE 0D 8E DF 0D BF
0C48:AD 20 D0 8D E0 0D 20 86 34
0C50:0D AD F6 0D C9 01 D0 0D 0B
0C58:20 9F FF 20 E4 FF C9 20 45
0C60:D0 F6 4C 22 0D 20 40 0D C0
0C68:A2 00 8E F6 0D 20 0F 0D 27
0C70:F0 FB C9 0D F0 19 C9 14 9D
0C78:F0 EB C9 9D F0 E7 20 D2 51
0C80:FF AE F6 0D 9D E1 0D E8 6B
0C88:8E F6 0D E0 0A 90 DE 20 C5
0C90:0F 0D C9 59 F0 F9 C9 4E 93
0C98:F0 F5 AE F6 0D A9 00 9D 98
0CA0:E1 0D 8E F7 0D A0 0E 20 65
0CA8:42 0D A0 00 B9 E1 0D 20 C8
0CB0:D2 FF C8 CC F6 0D 90 F4 1A
0CB8:20 0F 0D C9 59 F0 07 C9 49
0CC0:4E D0 F5 4C 65 0C A9 06 6C
0CC8:8D 20 D0 20 40 0D A0 00 43
0CD0:A2 00 8E F6 0D 20 0F 0D 8F
0CD8:F0 FB C9 0D F0 19 C9 14 06
0CE0:F0 E9 C9 9D F0 E5 20 D2 31
0CE8:FF AE F6 0D 9D EC 0D E8 FF
0CF0:8E F6 0D E0 0A 90 DE A2 B0
0CF8:00 BD E1 0D F0 24 DD EC 4E
0D00:0D D0 04 E8 4C F9 0C A9 EF
0D08:02 8D 20 D0 4C CB 0C A0 E1
0D10:6F 8C F8 0D C8 D0 FD CE 49
0D18:F8 0D D0 F8 20 9F FF 4C 67
0D20:E4 FF AD E0 0D 8D 20 D0 20
0D28:20 4E 0D 18 AC DE 0D AE B2
0D30:DF 0D 20 F0 FF 20 0C 0C 35
0D38:68 8D 27 0A 58 4C 33 FF C9
0D40:A0 00 B9 C0 0D F0 06 20 46
0D48:D2 FF C8 D0 F5 60 A0 00 64
0D50:B9 D8 12 99 00 04 B9 D2 AF
0D58:13 99 FA 04 B9 CC 14 99 C4
0D60:F4 05 B9 C6 15 99 EE 06 CC
0D68:B9 D8 16 99 00 D8 B9 D2 9B
0D70:17 99 FA D8 B9 CC 18 99 34
0D78:F4 D9 B9 C6 19 99 EE DA 0F
0D80:C8 C0 FA D0 CB 60 A0 00 BC
0D88:B9 00 04 99 D8 12 B9 FA 17
0D90:04 99 D2 13 B9 F4 05 99 E3
0D98:CC 14 B9 EE 06 99 C6 15 7D
```

```
ØDA0:B9 Ø0 D8 99 D8 16 B9 FA D9
ØDA8:D8 99 D2 17 B9 F4 D9 99 5Ø
ØDB0:CC 18 B9 EE DA 99 C6 19 41
ØDB8:C8 C0 FA DØ CB 6Ø Ø0 Ø0 B3
ØDC0:93 11 45 4E 54 45 52 2Ø F2
ØDC8:4B 45 59 2Ø 3E Ø0 93 43 63
ØDD0:4F 4E 46 49 52 4D 2Ø 28 B3
ØDD8:59 2F 4E 29 3F Ø0 Ø0 Ø0 C1
```

Materializer

See instructions in article on page 72 before typing in.

Program 1: Materializer

```
CC00:4C 0C CC 4C 74 CC 4C 3D CD
CC08:CD 4C 45 CD A9 08 20 D2 A1
CC10:FF A9 C0 85 FC A9 00 85 98
CC18:FB A8 A2 08 91 FB C8 D0 8D
CC20:FB E6 FC CA D0 F6 AD 18 93
CC28:D0 C9 15 F0 07 C9 21 F0 E0
CC30:03 A0 01 2C A0 00 B9 39 08
CC38:CD 8C AA 02 85 FC 20 21 D2
CC40:CD A9 00 A8 85 FD 85 FB E0
CC48:A9 A0 85 FE A2 08 B1 FB 14
CC50:91 FD C8 D0 F9 E6 FC E6 A4
CC58:FE CA D0 F2 20 19 CD A9 18
CC60:C8 8D 88 02 A9 93 20 D2 A1
CC68:FF A9 00 8D 00 DD A9 20 30
CC70:8D 18 D0 60 A2 00 8E A9 D2
CC78:02 A2 00 8E A7 02 A9 00 3D
CC80:85 FB 85 FD A9 C0 85 FC C4
CC88:A9 A0 85 FE A0 00 20 21 26
CC90:CD AE A7 02 AD A9 02 F0 DA
CC98:11 B1 FB 3D 29 CD F0 17 F3
CCA0:B1 FB 3D 31 CD 91 FB 18 91
CCA8:90 0D B1 FD 3D 29 CD 85 93
CCB0:02 B1 FB 05 02 91 FB A5 7B
CCB8:FB 18 69 08 85 FB 90 02 43
CCC0:E6 FC A5 FD 18 69 08 85 9D
CCC8:FD 90 02 E6 FE A5 FE C9 8A
CCD0:A8 D0 C1 A9 00 85 FB 85 59
CCD8:FD A9 C0 85 FC A9 A0 85 A1
CCE0:FE E8 E0 08 90 02 A2 00 A2
CCE8:AD A8 02 F0 0B 98 48 8A A8
CCF0:48 20 0A CD 68 AA 68 A8 3C
CCF8:C8 C0 08 90 97 EE A7 02 FA
CD00:AE A7 02 E0 08 F0 0F 4C 99
CD08:7E CC AC A8 02 A2 FF CA 9B
CD10:D0 FD 88 D0 F8 60 4C 19 AC
CD18:CD A5 01 09 07 85 01 58 5D
CD20:60 78 A5 01 29 FA 85 01 10
CD28:60 40 08 80 01 10 02 20 79
CD30:04 BF F7 7F FE EF FD DF 48
CD38:FB D0 D8 15 17 A9 01 8D 61
CD40:A9 02 4C 79 CC A9 04 8D F4
CD48:88 02 A9 93 20 D2 FF A9 0D
CD50:97 8D 00 DD AC AA 02 B9 C6
CD58:3B CD 8D 18 D0 A9 09 20 97
CD60:D2 FF 60 00 00 00 00 00 71
```

Program 2: Materializer Demo

```
HE 10 REM COPYRIGHT 1988 COMPU
      TE! PUBLICATIONS, INC. -
       ALL RIGHTS RESERVED
DG 40 IFPEEK(52225)<>12THENLOA
      D"ML-MAT",8,1
MQ 50 POKE53280,0:POKE53281,0:
      POKE680,3
QG 60 DIMVT$(24):VT$(0)="
      {HOME}":FORI=1TO24:VT$(I
      )=VT$(I-1)+"{DOWN}":NEXT
AE 70 PRINT"{BLK}{CLR}"CHR$(14
      ):SYS52224
FJ 75 PRINTVT$(7)TAB(5)"{CYN}
      {A}**********************
      *******{S}"
AQ 80 PRINTTAB(5)"-{28 SPACES}
      -"
BD 90 PRINTTAB(5)"- {RED}
      {6 SPACES}MATERIALIZER
      {9 SPACES}{CYN}-"
MG 100 PRINTTAB(5)"-{YEL}
      {6 SPACES}COPYRIGHT 198
      8{8 SPACES}{CYN}-"
BX 110 PRINTTAB(5)"-{YEL} COMP
      UTE! PUBLICATIONS,INC.
      {SPACE}{CYN}-"
RH 120 PRINTTAB(5)"-{YEL}
      {4 SPACES}ALL RIGHTS RE
      SERVED{5 SPACES}{CYN}-"
AG 130 PRINTTAB(5)"-
      {28 SPACES}-"
DA 140 PRINTTAB(5)"{Z}********
      **********************{X}
      "
GH 160 SYS52227:GOSUB520
FQ 170 SYS52230:FORDY=1TO700:N
      EXT:PRINT"{CLR}{BLU}":P
      OKE53280,12:POKE53281,1
      2
AH 180 A$="{RVS}":FORI=1TO39:A
      $=A$+" ":NEXT
RM 190 PRINTVT$(0)A$VT$(23)A$
SM 200 FORI=1TO22:PRINTVT$(I)"
      {RVS} "TAB(38)" ":NEXT
SC 210 PRINTVT$(9)TAB(10)"
      {BLK} COMPLETE SCREEN"
MG 220 PRINTVT$(11)TAB(11)"MAT
      ERIALIZATIONS"
PQ 230 PRINTVT$(13)TAB(12)"
      {2 SPACES}ARE EASY":SYS
      52227:GOSUB520
PX 250 SYS52230
BF 260 PRINT"{5}{CLR}"CHR$(9)C
      HR$(142):SYS52224
JA 270 PRINT"{CLR}"VT$(7)"
      {BLK}{3 RIGHT}ALL CHARA
      CTERS ARE HERE,"
BB 280 PRINTVT$(9)"{3 RIGHT}AL
      SO {RVS}{BLU} REVERSE
      {OFF} {BLK}AND"
FQ 290 PRINTVT$(11)"{3 RIGHT}
      {BLU}QASZX{+}{B}{V}
      {BLK}- CHARACTER GRAPHI
      CS!{BLK}"
AK 300 SYS52227:GOSUB520:SYS52
      230
BG 310 PRINT"{CLR}"VT$(12)"AND
       PROGRAMMABLE CHARACTER
      S ARE A SNAP!"
EM 320 FORI=0TO7:READA:POKE409
      60+I,A:NEXT
KF 330 DATA 60,60,24,255,24,60
      ,36,102
BC 340 PRINTVT$(14)TAB(16)"
      {BLU}@ @ @{BLK}":SYS522
      27
CX 350 GOSUB520:SYS52230
EB 360 PRINT"{5}{CLR}"CHR$(9)C
      HR$(14):SYS52224
CS 370 PRINTVT$(9)TAB(7)"{BLK}
      THE SPEED OF THE FADE I
      N"
CX 380 PRINTVT$(11)TAB(7)"AND
      {SPACE}FADE OUT MAY ALS
      O BE"
SC 390 PRINTVT$(13)TAB(7)"CONT
      ROLLED..."
KQ 400 PRINTVT$(15)TAB(16)"
      {RVS}{BLU} FAST "
GQ 410 POKE680,0:SYS52227:GOSU
      B550:SYS52230:GOSUB550
MK 420 PRINTVT$(15)TAB(14)"
      {RVS} REGULAR "
RS 430 POKE680,25:SYS52227:GOS
      UB550:SYS52230:GOSUB550
SM 440 PRINTVT$(15)TAB(14)"
      {OFF}{2 SPACES}{RVS} SL
      OW "
QH 450 POKE680,50:SYS52227:GOS
      UB550:SYS52230:GOSUB550
      :POKE680,0
HX 460 PRINT"{CLR}"VT$(9)TAB(1
      2)"{BLK}({BLU}R{BLK})ES
      TART DEMO"
KA 470 PRINTVT$(11)TAB(12)"(
      {BLU}E{BLK})XIT TO BASI
      C"
ED 480 SYS52227
HE 490 GETA$:IFA$="R"THENSYS52
      230:RUN
CF 500 IFA$="E"THENSYS52230:SY
      S52233:END
BG 510 GOTO490
EX 520 PRINTVT$(18)"{5 RIGHT}P
      RESS A KEY TO DE-MATERI
      ALIZE"
AX 530 GETA$:IFA$=""THEN530
QJ 540 RETURN
AK 550 FORDY=1TO1000:NEXT:RETU
      RN
```

Crossroads II: Pandemonium

See instructions in article on page 38 before typing in.

```
0801:0B 08 0A 00 9E 32 34 34 34
0809:35 00 00 00 CE 53 5C 50 80
0811:3C 1F 36 23 38 6C 79 33 99
0819:7F 3B ED 48 B0 A7 7D 37 50
0821:FC 3B 6C 46 00 C7 85 BF 5A
0829:FC 1F 6C 46 00 30 20 37 A9
0831:7C 30 E8 46 7E CF F8 F0 23
0839:F8 7F E6 87 3C 72 FF D5 7C
0841:C0 D5 7F 63 F8 BE D5 C0 7C
0849:D5 7E F0 98 C7 8D BF FC 7C
0851:FF EC C6 C3 FF 8F FF 3C 2C
0859:7E 7E EE 87 0E 48 EE 4C 5A
0861:7F 4E 5E 53 E3 C5 E9 FF CF
0869:E9 E5 C3 E0 00 00 00 80 EE
0871:46 7F 7C 46 3C 26 3C 20 8B
0879:20 3C 5E 46 40 40 80 B8 95
0881:AF 78 3F 36 E0 8F 89 FF 2B
0889:FC FF C2 83 38 38 30 7F 2B
0891:BE 68 CE EC 00 00 00 3C FF
0899:3C 00 00 00 00 00 44 AA FA
08A1:AA 11 00 00 00 00 02 FF 4F
08A9:02 00 00 00 4E 53 9F 58 12
08B1:3F 1E 08 0C 38 6C 7D 33 4C
08B9:FF 33 21 30 30 A7 75 37 FF
08C1:7C B0 10 18 00 07 C5 BF 27
08C9:FC 3B 10 18 00 30 20 3E E9
08D1:78 30 20 30 7E CF FF F0 55
08D9:FF 7F 30 38 3C 72 FE FF FC
08E1:D5 FF 7F 1C F8 BE FF D5 27
08E9:FF 7E 60 70 27 6D 9F FF DA
08F1:3F 3C 30 38 FF F1 FF 3C 3E
08F9:7E 7E 38 3C 4E E8 4E 4C B2
0901:7E 4E 4C 0E E3 C5 E9 FF 5A
0909:E9 E5 F3 98 00 00 00 80 12
0911:86 FF 7C 38 3C 24 3E 2C 94
0919:20 3C 10 18 00 30 40 B8 C7
0921:AF 78 3F 18 20 EF 89 FF 66
0929:F8 FF 4C 68 38 38 30 7F 4A
0931:76 30 30 38 00 00 00 3C 50
0939:3C 00 00 00 00 00 11 AA 36
0941:AA 44 00 00 00 00 02 FF BD
0949:02 00 00 00 DB C3 3C BD 80
0951:BD 3C C3 DB DB E7 7E BD C0
0959:BD 7E E7 DB 7E 81 81 81 23
0961:81 81 81 7E 66 A5 C3 18 16
0969:18 C3 A5 66 7E 81 99 A5 66
0971:A5 99 81 7E E7 A5 DB 24 86
0979:24 DB A5 E7 DB 99 3C FF 85
0981:FF 3C 99 DB 7E C3 BD BD CF
0989:BD BD C3 7E A9 FF 8D 0E C0
0991:D4 8D 0F D4 A9 80 8D 12 1D
0999:D4 A9 01 85 02 A9 C0 8D BE
09A1:72 0E A9 2F 8D 73 0E A9 98
09A9:03 85 06 A2 31 20 85 0E AC
09B1:18 69 0A 9D 00 04 20 85 1B
09B9:0E 69 08 9D 80 04 20 85 E1
09C1:0E C9 03 F0 F9 C9 02 D0 88
09C9:02 A9 FF 9D 00 05 20 85 FA
09D1:0E D0 07 A8 BD 00 05 F0 73
```

```
09D9:E5 98 C9 03 F0 F0 C9 02 4F
09E1:D0 02 A9 FF 9D 80 05 AD B8
09E9:1B D4 29 0F 69 05 9D 00 6F
09F1:06 9D 80 06 CA 10 B6 A9 8C
09F9:1A 85 FB 20 8B 0E A2 31 07
0A01:DE 80 06 10 1A BD 00 06 34
0A09:9D 80 06 BD 00 04 18 7D 66
0A11:00 05 9D 00 04 BD 80 04 36
0A19:18 7D 80 05 9D 80 04 A5 95
0A21:06 D0 31 BD 00 04 30 2C 0B
0A29:48 29 07 A8 68 4A 4A 4A 62
0A31:85 FC B9 F6 1E 85 FD BD AE
0A39:80 04 30 18 0A 18 7D 80 42
0A41:04 65 FC A8 20 75 0E 05 D2
0A49:FD 48 86 03 98 AA 68 20 CF
0A51:71 0E A6 03 CA 10 A9 C6 57
0A59:06 10 A3 A9 03 85 06 C6 84
0A61:FB 30 03 4C FC 09 C6 02 40
0A69:30 03 4C AC 09 A9 00 8D 27
0A71:0E DC 85 6D A9 73 85 01 72
0A79:A2 EC BD FF CF 9D FF 27 ED
0A81:BD EB D0 9D EB 28 CA D0 C9
0A89:F1 A2 3F BD 4D 09 9D 30 FC
0A91:29 CA 10 F7 A9 77 85 01 A5
0A99:A9 01 8D 0E DC A9 1A 8D A4
0AA1:18 D0 AD 24 D0 C9 F6 D0 5A
0AA9:02 E6 6D AD BE 21 D0 02 1F
0AB1:E6 6D A9 01 85 FC 20 8B C5
0AB9:0E A4 FC A9 0F 20 58 0D EE
0AC1:A0 00 A9 10 20 58 0D A0 79
0AC9:00 A9 11 20 58 0D E6 FC 2E
0AD1:A5 FC C9 0A 90 E0 A9 CC F9
0AD9:8D 16 D0 A9 FF 8D 15 D0 20
0AE1:A9 00 8D 21 D0 8D 20 D0 5C
0AE9:8D 1B D0 8D 1D D0 8D 17 DC
0AF1:D0 8D CD D0 A2 07 A9 00 1D
0AF9:9D 28 40 9D 50 60 CA 10 72
0B01:F5 85 66 85 67 A2 04 A8 0F
0B09:8D 60 40 86 52 99 00 60 C7
0B11:48 8A 99 19 60 C8 C0 19 73
0B19:F0 09 68 18 69 28 90 ED 73
0B21:E8 B0 EA 78 A9 15 8D 14 8D
0B29:03 A9 10 8D 15 03 58 20 8B
0B31:04 10 A2 07 86 0D 86 48 CF
0B39:86 52 8D 60 40 9D 40 60 38
0B41:9D 48 60 CA 10 F7 AA 9D 44
0B49:00 46 9D 00 50 E8 D0 F7 64
0B51:85 AE 85 AF 85 B0 CA 86 8C
0B59:D7 A9 0A 85 4B 85 B1 A9 DC
0B61:E6 A0 1D 20 1E AB 20 A7 40
0B69:0E A2 0F BD 86 1E 9D 14 E8
0B71:06 A9 0A 9D 14 DA CA 10 C1
0B79:F2 20 4C 11 A2 00 86 53 21
0B81:A9 96 A0 1E 20 1E AB A9 82
0B89:00 A6 53 E0 60 90 0A 8A A5
0B91:38 E9 60 A8 A9 00 F9 20 36
0B99:1F 18 7D 13 1E C9 F0 90 B0
0BA1:06 85 3A E6 53 D0 E0 8D FE
0BA9:4E 04 A5 3A 8D 4E D8 A5 3D
0BB1:53 29 01 F0 3C A6 CB E0 DF
0BB9:03 D0 03 4C 30 0B BD 81 55
0BC1:EB C9 31 90 07 C9 3A B0 F3
0BC9:03 8D 23 06 AD 00 DC C9 7A
0BD1:7F F0 07 29 10 F0 53 20 62
0BD9:1B 0C AD 01 DC C9 FF F0 45
0BE1:10 29 10 D0 09 AD 26 04 A8
0BE9:C9 20 F0 05 D0 3C 20 1B 2E
0BF1:0C A9 08 85 61 A9 00 85 09
0BF9:A2 A5 A2 C5 61 90 15 A6 99
0C01:53 E8 E0 60 90 0B A5 6D 88
0C09:F0 04 E0 73 90 03 4C 7D 94
0C11:0B 4C 7F 0B 20 2D 15 4C 8E
0C19:FA 0B AD 26 04 C9 20 F0 02
0C21:03 A9 20 2C A9 40 8D 26 7B
0C29:04 60 A2 00 A0 04 84 11 DE
0C31:20 D9 1D AD 26 04 C9 40 63
0C39:F0 02 A0 00 84 12 E8 20 BC
0C41:D9 1D AD 23 06 38 E9 30 8A
0C49:85 B1 85 47 85 4B A9 9D FF
0C51:A0 1E 20 1E AB A2 27 BD 1B
0C59:00 D8 9D 28 D8 A9 20 9D 29
0C61:28 04 CA 10 F2 20 A7 0E 5E
0C69:20 58 0F A9 00 AA 9D 00 0A
0C71:46 E8 D0 FA 85 C9 85 6B 7A
0C79:A9 02 85 4C 85 41 85 6C 05
0C81:A5 4B 0A 0A 18 69 46 B0 C4
0C89:02 85 D7 A2 0C 86 0D CA 88
0C91:86 39 20 4C 11 A5 11 F0 36
0C99:05 A2 00 20 A8 19 A5 12 E5
0CA1:F0 05 A2 01 20 A8 19 A9 57
0CA9:05 85 FE 20 D2 12 A9 3F F8
0CB1:20 A5 0F A9 01 20 C5 0F E2
0CB9:C6 FE D0 EF A9 F9 85 A1 EF
0CC1:A4 CB C0 06 D0 15 AD 60 2E
0CC9:40 49 01 8D 60 40 A5 A2 3F
0CD1:18 69 0F 85 FC A5 A2 C5 14
0CD9:FC D0 FA AD 60 40 F0 20 E4
0CE1:A5 A2 29 01 AA 98 DD 05 23
0CE9:1F D0 D5 B5 11 F0 D1 FE CA
0CF1:18 1F BD 18 1F 09 20 9D 12
0CF9:00 44 20 69 12 4C CF 0C 2B
0D01:A5 46 F0 06 20 D9 1A 4C E6
0D09:3A 18 A5 A1 30 0C A9 F9 14
0D11:85 A1 E6 3F D0 04 A9 FF 11
0D19:85 3F C6 6C D0 14 A5 41 C8
0D21:85 6C A5 A2 85 FC A5 41 A4
0D29:C9 FF F0 06 A5 A2 C5 FC E6
0D31:F0 FA 20 2D 15 AD 1B D4 C3
0D39:D0 1A AD 1B D4 C9 C8 90 99
0D41:13 A5 6B C9 05 B0 0D E6 44
0D49:6B 20 D2 12 A9 3F 20 A5 CC
0D51:0F 20 B0 1D 4C C1 0C A2 07
0D59:00 86 FD 18 65 FD AA 98 67
0D61:0A 0A 0A A8 B9 80 29 20 11
0D69:71 0E E8 E8 E8 C8 86 FD E0
0D71:E0 27 90 F0 60 A5 B9 18 0C
0D79:6A A2 00 90 02 A2 80 8E A4
0D81:72 0E 18 69 2A 8D 73 0E 6E
0D89:A9 00 A2 7F 20 71 0E CA 72
0D91:10 FA A5 44 0A 0A 0A A8 A0
0D99:A2 00 B9 0D 08 20 71 0E BE
0DA1:C8 E8 E0 08 D0 F4 B9 A5 6A
0DA9:08 4A 4A 4A 4A 20 71 0E 0C
0DB1:E8 C8 E0 10 D0 F0 B9 9D EA
0DB9:08 0A 0A 0A 0A 20 71 0E FD
0DC1:E8 C8 E0 18 D0 F0 B9 95 73
0DC9:08 20 71 0E E8 C8 E0 20 4B
0DD1:D0 F4 20 E4 0D A0 00 A2 71
0DD9:40 20 15 0E A0 20 A2 60 CA
0DE1:4C 15 0E A9 00 85 FC 8A 5E
0DE9:38 E9 20 A8 20 75 0E A4 C0
0DF1:FC 39 F6 1E D9 F6 1E D0 51
0DF9:0E 8A A8 20 75 0E A4 FC FE
0E01:18 79 FD 1E 20 71 0E C8 D4
0E09:84 FC C0 08 D0 D9 E8 E0 DF
0E11:40 D0 D0 60 86 FC 84 FD D0
0E19:A9 04 85 FB A9 00 85 03 D6
0E21:A9 00 85 FE A5 FE 18 65 71
0E29:FD A8 20 75 0E A6 03 3D 18
0E31:F6 1E DD F6 1E D0 16 A5 81
0E39:03 18 65 FC A8 20 75 0E 18
0E41:18 A6 FE 7D FD 1E 48 98 5C
0E49:AA 68 20 71 0E E6 FE A5 9F
0E51:FE C9 08 D0 CF E6 03 A5 33
0E59:03 C9 08 D0 C3 A5 FC 18 3E
0E61:69 08 85 FC A5 FD 18 69 73
0E69:08 85 FD C6 FB D0 AD 60 F5
0E71:9D FF FF 60 AD 72 0E 8D 43
0E79:82 0E AD 73 0E 8D 83 0E 03
0E81:B9 FF FF 60 AD 1B D4 29 2D
0E89:03 60 AD 72 0E 18 69 40 FF
0E91:90 03 EE 73 0E 8D 72 0E 65
0E99:A9 00 A2 3E 20 71 0E CA 70
0EA1:10 FA 60 20 58 0F AD 1B 08
0EA9:D4 29 07 18 69 26 C5 C4 11
0EB1:F0 F4 85 C4 AD 1B D4 29 2D
0EB9:07 AA BD D3 1E C5 C3 F0 79
0EC1:F3 85 C3 A9 00 85 BB A6 80
0EC9:B1 A5 B0 D0 04 E0 05 90 89
0ED1:10 AD 1B D4 85 BB 20 85 F2
0ED9:0E AA E8 E4 C8 F0 F7 86 93
0EE1:C8 BD CE 1E 85 02 A9 00 15
0EE9:85 03 85 FD A0 02 A6 02 76
0EF1:A5 BB 30 06 BD 06 20 4C C8
0EF9:FE 0E BD E2 20 A6 03 3D DD
0F01:F6 1E F0 03 A5 C4 2C A9 B2
0F09:20 85 06 A6 FD 20 A5 0F 8E
0F11:A5 C3 20 C5 0F A9 26 38 F6
0F19:E5 FD AA A5 06 20 A5 0F 64
0F21:A5 C3 20 C5 0F E6 03 E6 64
0F29:FD A5 03 C9 08 D0 06 A9 E5
0F31:00 85 03 E6 02 A5 FD C9 EB
0F39:14 D0 B3 C8 C0 18 F0 06 E6
0F41:A9 00 85 FD F0 A8 A2 27 5B
0F49:BD 50 04 9D C0 07 A5 C3 E5
0F51:9D C0 DB CA 10 F2 60 A2 46
0F59:07 18 BD 40 60 69 30 9D 63
0F61:28 04 BD 48 60 69 30 9D 77
0F69:43 04 BD 50 60 69 30 9D 8D
0F71:35 04 CA 10 E5 A5 11 18 85
0F79:69 30 8D 33 04 A5 12 69 81
0F81:30 8D 4E 04 A5 B0 69 30 18
0F89:8D 3F 04 A5 B1 69 30 8D 3A
0F91:40 04 AD 00 46 18 69 30 1C
0F99:8D 31 04 AD 01 46 69 30 4A
0FA1:8D 4C 04 60 85 0C A9 9D 6D
0FA9:8D C1 0F D0 05 A9 BD 8D C5
0FB1:C1 0F B9 00 60 8D C2 0F 79
0FB9:B9 19 60 8D C3 0F A5 0C 91
0FC1:BD 00 04 60 85 0C A9 9D 92
0FC9:8D E4 0F D0 05 A9 BD 8D AE
0FD1:E4 0F B9 00 60 8D E5 0F 71
0FD9:B9 19 60 18 69 D4 8D E6 49
0FE1:0F A5 0C BD 00 04 60 85 A4
0FE9:0C A9 9D 2C A9 BD 8D E4 33
0FF1:0F B9 00 60 8D E5 0F B9 E7
0FF9:19 60 18 69 BC 8D E6 0F 4F
1001:4C E2 0F A2 07 A9 00 9D 88
1009:28 40 9D 00 D0 9D 08 D0 DE
1011:CA 10 F4 60 E6 46 AE 60 4D
1019:40 BD 46 1F 8D 18 D4 F0 EA
1021:06 A5 A2 29 01 D0 03 4C 32
1029:31 EA A2 01 86 6A B5 4E 98
1031:F0 02 D6 4E D6 49 D0 08 8F
1039:B5 AA 95 49 A9 01 95 A8 4B
1041:B5 66 F0 53 BC 38 1F C9 F7
1049:05 90 1B D0 06 B5 68 A2 FA
1051:21 D0 26 C9 07 F0 06 B5 55
1059:68 A2 81 D0 1C B5 68 18 34
1061:69 F6 A2 81 D0 13 AA AD 36
1069:1B D4 3D 41 1F 18 7D 3D 99
1071:1F 85 8F BD 39 1F AA A5 91
1079:8F 99 01 D4 A9 09 99 05 DE
1081:D4 A9 00 99 04 D4 8A 99 32
1089:04 D4 A6 6A D6 68 D0 07 5D
1091:A9 00 95 66 99 04 D4 CA F0
1099:C6 6A 10 92 C6 40 D0 1F DA
10A1:A9 03 85 40 A5 3F 38 E5 8C
10A9:3C F0 10 B0 08 C6 41 D0 DF
10B1:0A E6 41 D0 06 E6 41 D0 E4
10B9:02 C6 41 A9 00 85 3C C6 A4
10C1:52 D0 1C A9 02 85 52 A6 CE
10C9:CA CA 10 02 A2 02 86 CA 19
10D1:BC 15 1F A2 07 B9 20 1F 22
10D9:9D F8 29 C8 CA 10 F6 A2 DF
10E1:07 BD 28 40 F0 5C BC 20 90
10E9:40 BD 48 40 18 79 1E 1F A8
10F1:D9 1C 1F F0 19 9D 48 40 09
10F9:38 E9 02 D9 1C 1F D0 38 C5
1101:BC 58 40 B9 00 45 29 BF 62
1109:99 00 45 4C 39 11 C0 00 F4
1111:F0 19 BD 38 40 F0 14 BD D8
1119:30 40 18 69 01 C9 0F B0 FA
1121:0A 9D 30 40 BD 38 40 69 72
1129:F5 D0 14 A9 00 9D 28 40 9E
1131:8A 0A A8 A9 00 99 01 D0 04
1139:BD 40 40 18 7D 48 40 9D FE
1141:F8 07 CA 30 03 4C E2 10 1D
1149:4C 31 EA A9 00 85 48 85 02
1151:BC A2 12 A9 FF 9D 96 40 3B
1159:9D 83 40 CA 10 F7 A9 00 93
1161:85 B9 A9 10 85 44 20 76 DE
1169:0D A5 B9 A4 44 99 96 40 F2
1171:E6 44 E6 B9 C0 13 90 EE F2
1179:A2 0C 86 0D CA 86 39 AD 22
1181:1B D4 29 1F 69 28 85 6E E2
1189:60 AD 1B D4 29 0F AA A5 78
1191:4B DD 48 1F 90 F3 BD 96 32
1199:40 10 40 A5 B9 C9 0A 90 DB
11A1:1B D0 E6 E0 03 F0 E2 E0 F2
11A9:04 F0 DE AD 99 40 30 0C FA
11B1:AD 98 40 10 07 AD 9A 40 3E
11B9:30 02 A2 02 E6 B9 A5 B9 0C
11C1:9D 96 40 86 44 20 76 0D 65
11C9:A6 44 A5 4B DD E2 1F 90 03
```

```
11D1:0A AD 1B D4 29 03 F0 03 4F
11D9:9D 83 40 86 44 20 D2 12 76
11E1:A5 44 20 FA 13 A6 A3 A9 BF
11E9:00 20 FB 12 A6 A3 A5 44 08
11F1:C9 0C D0 1A A5 4B C9 14 B9
11F9:90 14 A9 02 9D 00 47 A9 E3
1201:49 9D 00 44 A9 05 9D 00 12
1209:46 A9 18 9D 00 45 A5 8E 86
1211:10 06 A9 00 9D 00 46 60 CD
1219:BC 00 4F BD 00 4E AA A9 99
1221:00 20 C5 0F A9 00 4C A5 82
1229:0F 84 0F A9 01 20 35 1B 80
1231:A4 0F B9 13 1F 4C 35 1B 83
1239:C0 02 B0 09 A0 00 C9 05 82
1241:F0 0C C8 D0 09 A4 66 F0 9F
1249:05 A4 67 D0 0A C8 99 66 20
1251:00 A9 14 99 68 00 60 A0 A0
1259:00 A5 66 C9 06 F0 EF C8 EC
1261:A5 67 C9 06 F0 E8 60 AA 62
1269:BD 00 44 85 FC BD 00 44 70
1271:29 20 D0 04 A9 00 85 FC E1
1279:86 8D BD 00 51 A8 B9 0B A7
1281:1F 18 7D 00 42 85 FB BD C8
1289:00 45 10 02 E6 FB BD 00 C3
1291:45 29 04 F0 06 E6 FB E6 DC
1299:FB E6 FB 86 03 20 B5 12 73
12A1:A6 03 BD 00 45 10 0C E6 FA
12A9:FB 20 5E 19 A6 07 A4 08 D3
12B1:20 C3 12 60 BD 00 4F 20 CB
12B9:85 19 A8 BD 00 4E 20 7A CB
12C1:19 AA A5 FC 20 C5 0F A5 7D
12C9:FB 20 A5 0F A5 8D 4C E8 7E
12D1:0F AD 1B D4 29 1F 85 FC 67
12D9:AD 1B D4 29 07 18 65 FC 29
12E1:AA AD 1B D4 29 0F 69 02 D1
12E9:85 FC AD 1B D4 29 07 65 36
12F1:FC A8 20 AE 0F C9 20 D0 5E
12F9:D8 60 85 FC A8 86 FE A9 2A
1301:05 85 8E C0 00 D0 02 C6 F6
1309:8E BE 9B 1E BD 28 40 F0 7B
1311:29 BD 20 40 D0 11 C6 8E 2A
1319:10 0D A5 FE C9 02 90 01 A7
1321:60 18 69 05 AA D0 13 CA 84
1329:10 E2 A6 C9 E8 E0 08 90 EC
1331:02 A2 00 86 C9 BD 20 40 2F
1339:F0 F0 A9 00 9D 30 40 A5 1D
1341:FC 9D 20 40 F0 12 A4 09 77
1349:C0 0C B0 0C A4 0A B9 00 6A
1351:46 D0 05 B9 00 4C D0 08 E5
1359:A9 08 A8 20 39 12 A9 00 D2
1361:9D 38 40 A4 FC B9 1A 1F D8
1369:9D 48 40 AD 1B D4 29 01 D2
1371:A8 B9 09 1F 9D 40 40 A5 81
1379:FE 9D 58 40 A8 B9 00 44 06
1381:9D 27 D0 B9 00 45 30 04 6F
1389:A9 00 F0 09 B9 00 51 A8 4C
1391:85 FD B9 DB 1E 18 69 14 27
1399:85 FC A4 FE B9 00 4E C9 7A
13A1:1E B0 0C A9 FF 38 FD FD F9
13A9:1E 2D 10 D0 4C B6 13 BD 5A
13B1:FD 1E 0D 10 D0 8D 10 D0 AE
13B9:B9 00 4E 0A 0A 0A 18 65 35
13C1:FC 85 FC 8A 0A A8 A5 FC 4B
13C9:99 00 D0 A4 FE B9 00 45 45
13D1:30 04 A9 00 F0 05 A4 FD 29
13D9:B9 DF 1E 18 69 2D 85 FC 22
13E1:A4 FE B9 00 4F 0A 0A 0A 12
13E9:18 65 FC 85 FC 8A 0A A8 3C
13F1:A5 FC 99 01 D0 FE 28 40 80
13F9:60 85 04 98 48 8A 48 20 D8
1401:21 14 A5 04 20 47 14 68 62
1409:9D 00 4E 68 9D 00 4F 20 FB
1411:85 0E 9D 00 51 A9 01 9D 04
1419:00 4D A9 00 9D 00 50 60 B7
1421:A2 0C BD 00 46 F0 16 E8 60
1429:D0 F8 A6 39 E8 D0 02 A2 91
1431:0C 86 39 20 A4 14 A6 39 26
1439:20 EF 1C A6 39 E4 48 90 D9
1441:02 86 48 86 A3 60 A8 9D 0B
1449:00 41 B9 BA 1F 9D 00 44 58
1451:B9 CE 1F 9D 00 45 B9 94 E4
1459:1F 9D 00 4A B9 A6 1F 9D 61
1461:00 43 B9 58 1F 48 29 0F 92
1469:9D 00 49 68 4A 4A 4A 4A 6A
1471:9D 00 4B B9 6C 1F 48 29 07
1479:0F 9D 00 46 68 4A 4A 4A 40
1481:4A 9D 00 4C B9 80 1F 48 51
1489:29 0F 9D 00 48 68 4A 4A 80
1491:4A 4A 9D 00 47 B9 96 40 B3
1499:0A 0A 0A 0A 18 69 40 9D AF
14A1:00 42 60 A9 20 85 FB 8A 9A
14A9:48 20 B5 12 68 AA BD 00 3F
14B1:45 10 03 4C AA 12 60 B9 BD
14B9:00 4C BC 15 1F 18 79 45 6F
14C1:60 99 45 60 20 CB 14 4C D3
14C9:58 0F 86 07 A9 05 85 FC 8C
14D1:18 7D 15 1F AA BD 40 60 27
14D9:C9 0A 90 0D 38 E9 0A 9D 67
14E1:40 60 CA FE 40 60 E8 D0 B1
14E9:EC CA C6 FC 10 E7 A6 07 58
14F1:BC 15 1F B9 43 60 4A D5 43
14F9:AE F0 0F 95 AE B5 11 18 77
1501:69 01 C9 0A 90 02 A9 09 E2
1509:95 11 A2 00 86 FC B9 40 72
1511:60 DD 50 60 90 0F F0 05 9A
1519:9D 50 60 C6 FC C8 E8 E0 5C
1521:06 90 EB F0 04 C5 FC 90 C0
1529:EF A6 07 60 A5 6E F0 09 AD
1531:20 8A 11 A5 8E 30 11 C6 A8
1539:6E AD 1B D4 D0 0A AD 1B DB
1541:D4 C5 D7 B0 03 20 8A 11 0C
1549:E6 0D A6 0D E4 48 90 12 4B
1551:F0 02 B0 07 BD 00 46 D0 46
1559:0E C6 48 A2 0B 86 0D E6 E2
1561:3C 60 BD 00 46 F0 E1 BD F0
1569:00 45 29 40 D0 DA DE 00 BD
1571:4D D0 D5 BD 00 47 9D 00 65
1579:4D BD 00 50 10 08 A9 00 B2
1581:9D 00 50 4C 69 12 BD 00 58
1589:45 10 03 4C 68 1D BD 00 B2
1591:43 10 30 86 13 20 CF 1D A5
1599:A6 13 C9 20 D0 03 4C 7B BD
15A1:1D BC 00 43 30 06 C6 41 26
15A9:D0 02 E6 41 C9 40 90 0B 29
15B1:20 A4 14 A6 13 20 FA 1A 2B
15B9:4C FB 1B A9 00 9D 00 46 C3
15C1:4C A4 14 20 10 1A A0 03 EC
15C9:A6 0D B9 61 40 C9 3F 90 10
15D1:0E C9 40 B0 10 BD 00 44 44
15D9:29 10 F0 03 20 E9 17 88 4A
15E1:10 E6 4C 73 16 BE AE 40 D7
15E9:BD 00 41 C9 11 90 19 C9 7E
15F1:12 F0 15 A6 0D BD 00 45 13
15F9:29 10 D0 03 20 28 18 BD 96
1601:00 43 C9 12 F0 D9 F0 57 80
1609:A6 0D DD 00 41 F0 0A DD 47
1611:00 49 F0 05 DD 00 4A D0 52
1619:1A A9 01 99 69 40 BD 00 3E
1621:45 29 08 F0 BA 98 AA FE D6
1629:6D 40 20 20 18 20 20 18 BB
1631:4C E0 15 BE AE 40 BD 00 3C
1639:41 C9 01 D0 0A BD 00 51 3E
1641:AA 98 DD 0F 1F F0 07 A6 07
1649:0D BD 00 44 10 07 A6 0D A6
1651:20 28 18 D0 0A BD 00 44 33
1659:29 40 F0 03 20 E9 17 BD 0D
1661:00 45 29 03 85 03 20 85 32
1669:0E 38 E5 03 99 7F 40 4C 2F
1671:E0 15 A6 0D BD 00 51 AA 34
1679:A8 FE 6D 40 BE 0F 1F DE BA
1681:6D 40 DE 6D 40 20 20 18 02
1689:20 20 18 A0 03 84 0E B9 DA
1691:6D 40 88 85 FD B9 6D 40 DF
1699:C5 FD 90 06 F0 EA 85 FD D6
16A1:84 0E 88 10 F0 A4 0E B9 95
16A9:65 40 C9 01 D0 17 B9 61 99
16B1:40 F0 0F C9 1B 90 0B C9 B3
16B9:3F B0 0A A9 01 99 6D 40 17
16C1:D0 C9 4C D9 17 A0 03 84 B5
16C9:04 C4 0E F0 03 20 0B 18 C0
16D1:A4 04 88 10 F2 A5 0E A6 54
16D9:0D DD 00 51 F0 09 9D 00 FF
16E1:51 20 69 12 4C 09 18 A6 6A
16E9:0D A4 0E B9 65 40 C9 01 E3
16F1:F0 5B BD 00 41 C9 01 D0 29
16F9:51 B9 61 40 C9 40 90 40 1E
1701:A9 03 9D 00 4D 9D 00 47 A0
1709:BE AE 40 BD 00 51 85 0A 80
1711:A8 B9 0F 1F C5 0E F0 10 2E
1719:BC 00 45 30 10 A4 0E B9 3A
1721:0F 1F 9D 00 51 4C 69 12 F2
1729:BD 00 45 10 10 20 68 1D CE
1731:A6 8D BD 00 45 09 04 9D C1
1739:00 45 4C 69 12 4C 7B 1D AE
1741:A6 0D A9 09 9D 00 4D 9D F0
1749:00 47 4C E1 17 B9 61 40 93
1751:C9 3F D0 1B FE 00 50 FE 97
1759:00 46 BD 00 41 C9 06 D0 DE
1761:05 A9 03 9D 00 47 A9 04 2B
1769:A8 20 39 12 4C E1 17 B0 05
1771:03 4C 73 16 B9 69 40 D0 C8
1779:1A B9 AE 40 85 0A 86 09 67
1781:20 FB 1B A6 0D BD 00 46 32
1789:F0 6B A6 0A BD 00 46 F0 EB
1791:4F D0 45 BE AE 40 BD 00 22
1799:41 C9 03 D0 3B A6 0D BD 94
17A1:00 41 C9 04 D0 32 BD 00 64
17A9:50 48 A9 00 9D 00 46 84 45
17B1:0A 20 A4 14 A4 0A BE AE 3C
17B9:40 BD 00 45 29 80 48 A9 51
17C1:02 20 47 14 68 1D 00 45 20
17C9:29 BF 9D 00 45 68 18 7D A9
17D1:00 50 9D 00 50 4C 69 12 60
17D9:A6 0D 20 90 1D 4C 69 12 AA
17E1:A6 0D 20 7B 1D 4C 09 18 A6
17E9:A9 28 38 F9 65 40 18 79 73
17F1:6D 40 99 6D 40 60 A9 28 EF
17F9:38 F9 65 40 85 03 B9 6D 8C
1801:40 38 E5 03 99 6D 40 60 AF
1809:A4 0E B9 7F 40 30 01 60 63
1811:20 21 14 98 A4 0D 20 5F 9E
1819:1B A9 06 A8 4C 39 12 20 18
1821:85 0E AA FE 6D 40 60 20 2A
1829:F7 17 20 F7 17 98 48 B9 04
1831:0F 1F A8 20 F7 17 68 A8 5D
1839:60 A2 01 86 3A A6 3A B5 61
1841:A8 F0 15 B5 11 F0 11 A9 18
1849:00 95 A8 BD 00 45 29 40 77
1851:D0 06 20 79 18 20 17 1B 91
1859:C6 3A 10 E1 AD 00 50 18 C1
1861:6D 01 50 C9 05 90 03 4C EB
1869:0A 1D A5 11 D0 07 A5 12 AB
1871:D0 03 4C AC 1A 4C 0B 0D 44
1879:BD 00 DC 85 4D 86 05 29 34
1881:0F 38 E9 05 A8 B9 EB 1E F6
1889:85 04 30 0F BD 00 51 C5 CA
1891:04 D0 0D BD 00 45 10 40 EA
1899:4C 68 1D A6 05 4C 69 12 56
18A1:BD 00 51 A8 85 06 BD 00 25
18A9:45 30 18 A4 04 20 61 19 52
18B1:20 D2 1D A6 05 C9 20 F0 35
18B9:17 C9 3F B0 13 A5 06 85 9B
18C1:04 90 15 B9 0F 1F C5 04 DA
18C9:D0 CE 20 5E 19 20 CE 1A 01
18D1:A5 04 9D 00 51 4C 9C 18 96
18D9:20 CF 1D 48 20 CE 0F 29 B9
18E1:0F 85 42 A6 05 68 C9 20 2B
18E9:F0 6E C9 3F F0 30 C9 3F 76
18F1:90 60 20 FA 1A C0 02 90 9E
18F9:59 B9 00 41 C9 0C F0 52 0C
1901:C0 0C B0 0A B9 00 51 A6 64
1909:3A DD 00 51 F0 44 20 FB B9
1911:1B A4 0A B9 00 46 D0 05 96
1919:A6 09 4C B8 14 60 FE 00 16
1921:50 A5 42 C9 01 F0 0E C9 7B
1929:06 F0 06 A9 04 95 BE D0 BA
1931:04 A9 01 95 AA A0 01 A9 CC
1939:04 20 39 12 BC 00 46 C8 F8
1941:C0 0A 90 02 A0 09 98 9D 80
1949:00 46 20 93 0F 4C 59 19 BF
1951:D0 06 20 90 1D 4C 9C 18 E5
1959:A6 05 4C 7B 1D BC 00 51 8E
1961:BD 00 4E 18 79 E3 1E 20 75
1969:7A 19 85 07 BD 00 4F 18 E4
1971:79 E7 1E 20 85 19 85 08 C3
1979:60 10 02 A9 26 C9 27 90 F1
1981:02 A9 00 60 C9 01 D0 02 1B
1989:A9 18 C9 19 90 02 A9 02 43
1991:60 BD 00 45 49 80 9D 00 3F
1999:45 BD 00 45 29 FB 9D 00 A6
19A1:45 60 D6 11 20 D9 1D A5 C2
19A9:4B 4A 85 3F 86 05 B5 11 7D
19B1:F0 5A A9 10 20 47 14 B5 25
19B9:14 9D 00 46 A9 01 95 49 87
19C1:95 4E BD 18 1F 09 20 9D 86
```

```
19C9:00 44 BD 07 1F 85 07 A9 FB
19D1:17 85 08 20 CE 1A BD 13 61
19D9:1F 9D 00 51 A9 00 20 FB A1
19E1:12 A6 05 20 D2 1D A6 05 C6
19E9:C9 20 F0 1B C9 3F D0 05 CA
19F1:FE 00 50 D0 12 20 05 1B F0
19F9:A6 0A 20 A4 14 A6 0A A9 49
1A01:00 9D 00 46 20 EF 1C A4 9E
1A09:05 20 2A 12 4C 76 0F 86 0F
1A11:05 BD 00 48 85 FD 85 02 EC
1A19:A0 03 84 FC A9 A0 99 6D 2F
1A21:40 A9 00 99 65 40 99 69 42
1A29:40 99 7F 40 88 10 ED 85 BD
1A31:42 A6 05 BC 00 41 B9 83 98
1A39:40 10 02 E6 42 A6 05 BD B4
1A41:00 4E 85 03 BD 00 4F 85 FB
1A49:FB A4 FC A5 03 18 79 E3 ED
1A51:1E 20 7A 19 AA 85 03 A5 94
1A59:FB 18 79 E7 1E 20 85 19 D4
1A61:A8 85 FB 20 AE 0F A6 FC C8
1A69:9D 61 40 FE 65 40 BD 61 C5
1A71:40 C9 20 D0 06 C6 FD D0 61
1A79:D0 F0 10 C9 40 90 0C A6 F3
1A81:03 20 ED 0F E6 42 A6 FC 78
1A89:9D AE 40 C6 FC 30 07 A5 09
1A91:02 85 FD 4C 3E 1A A6 05 59
1A99:A5 42 F0 04 A9 20 85 42 AA
1AA1:BD 00 44 29 DF 05 42 9D 05
1AA9:00 44 60 A2 08 BD F5 1F 67
1AB1:F0 08 9D 17 06 A5 A2 9D 2F
1AB9:17 DA CA 10 F0 20 99 1D E2
1AC1:F0 03 4C 1B 0D A9 93 20 C0
1AC9:D2 FF 4C 30 0B A5 07 9D 8E
1AD1:00 4E A5 08 9D 00 4F 60 BA
1AD9:A2 02 A9 00 85 46 BD 00 D5
1AE1:46 F0 10 BD 00 45 10 06 8E
1AE9:20 68 1D 4C F2 1A 20 94 85
1AF1:15 A6 13 E8 E0 0C D0 E6 0B
1AF9:60 86 09 20 5E 19 A6 07 CE
1B01:A4 08 D0 09 86 09 BC 00 08
1B09:4F BD 00 4E AA 20 ED 0F FB
1B11:A8 A6 09 84 0A 60 A5 4D 19
1B19:29 10 D0 F9 A4 3A B9 4E 71
1B21:00 F0 01 60 A9 05 20 39 94
1B29:12 A4 3A B9 BE 00 99 4E EB
1B31:00 B9 00 51 85 FE 84 05 21
1B39:A2 02 BD 00 46 F0 19 E8 0A
1B41:E0 0C D0 F6 A6 4C 86 FD E5
1B49:20 A4 14 A6 4C E8 E0 0C 79
1B51:D0 02 A2 02 86 4C A6 FD 95
1B59:A5 FE A4 05 86 8D 9D 00 AC
1B61:51 B9 00 4B 48 B9 00 43 CF
1B69:86 05 84 FD 20 47 14 68 43
1B71:9D 00 47 A9 01 9D 00 4D C5
1B79:A4 FD BD 00 41 C9 12 D0 5F
1B81:06 B9 00 41 9D 00 4A BD 7C
1B89:00 44 29 F0 19 00 44 9D F3
1B91:00 44 B9 00 45 29 40 F0 50
1B99:05 A9 20 9D 00 46 BC 00 2D
1BA1:51 A6 FD 20 61 19 A6 05 AD
1BA9:20 CE 1A A6 FD BD 00 45 7D
1BB1:10 08 A6 05 20 5E 19 20 E3
1BB9:CE 1A A5 FD C9 02 B0 05 2F
1BC1:A6 05 9D 00 43 20 D2 1D 9D
1BC9:A6 05 C9 20 F0 1C C9 40 9B
1BD1:B0 06 A9 00 9D 00 46 60 F0
1BD9:86 09 20 FF 1A 20 FB 1B FD
1BE1:A6 0A BD 00 46 30 02 D0 6D
1BE9:0E 60 BD 00 43 30 08 E6 C8
1BF1:41 D0 04 A9 FF 85 41 4C FC
1BF9:69 12 A4 0A B9 00 43 C9 BC
1C01:12 D0 2F A6 09 BD 00 45 4B
1C09:29 20 F0 26 BD 00 46 C9 A2
1C11:14 B0 1F B9 00 51 A8 BD 53
1C19:00 51 D9 0F 1F F0 13 BC 71
1C21:00 51 B9 0F 1F 9D 00 51 96
1C29:A9 01 A6 09 BC 00 43 4C 94
1C31:39 12 A6 0A DE 00 46 A9 2D
1C39:01 20 FB 12 A0 03 A6 09 02
1C41:BD 00 45 29 20 F0 04 DE 3F
1C49:00 46 2C A0 07 84 0B BD C0
1C51:00 41 C9 01 F0 10 BD 00 66
1C59:43 30 20 C9 02 B0 1C BD A8
1C61:00 46 C9 02 90 15 A6 0A B4
1C69:A9 00 9D 00 46 F0 0C BD F5
1C71:00 45 29 20 F0 05 A9 01 12
1C79:20 FB 12 A6 0A BD 00 46 FA
1C81:D0 12 A5 0B C9 07 F0 04 5C
1C89:A9 02 85 0B 20 A4 14 A6 DA
1C91:0A 20 EF 1C A6 09 BD 00 6B
1C99:46 D0 08 20 A4 14 A6 09 F7
1CA1:20 EF 1C A6 09 E0 02 B0 54
1CA9:0D 20 93 0F BD 00 46 30 7E
1CB1:02 D0 03 4C A3 19 BD 00 41
1CB9:43 C9 02 B0 0B A4 0A BE 0F
1CC1:00 46 D0 04 AA 20 B8 14 41
1CC9:A0 02 A6 09 E0 0C B0 01 D1
1CD1:88 A6 0A E0 0C B0 01 88 F4
1CD9:A5 0B 20 39 12 A6 0A E0 5F
1CE1:02 B0 0A 20 93 0F BD 00 DE
1CE9:46 F0 C8 30 C6 60 BD 00 D0
1CF1:50 85 FE A9 00 9D 00 50 F4
1CF9:C6 FE 30 F1 20 D2 12 A9 94
1D01:3F 20 A5 0F 20 B0 1D D0 57
1D09:EF 20 04 10 A2 01 BC 15 6C
1D11:1F B5 11 F0 25 BD 00 50 E9
1D19:0A 0A 18 7D 00 50 79 45 2F
1D21:60 99 45 60 A9 00 9D 00 29
1D29:50 A5 47 C5 4B D0 0B 0A F7
1D31:0A 79 44 60 38 E9 04 99 68
1D39:44 60 20 CB 14 CA 10 CE 29
1D41:A6 B1 E8 E0 0A 90 04 A2 A3
1D49:00 E6 B0 86 B1 20 99 1D 1A
1D51:D0 FB 20 58 0F 20 A7 0E D2
1D59:AD 00 46 85 14 AD 01 46 2B
1D61:85 15 E6 4B 4C 6C 0C 86 E7
1D69:13 20 A4 14 A6 13 20 5E 2B
1D71:19 20 CE 1A 20 92 19 4C 85
1D79:69 12 86 13 BD 00 45 29 90
1D81:FB 9D 00 45 20 92 19 20 13
1D89:69 12 A6 13 4C 6E 12 BD 01
1D91:00 45 49 04 9D 00 45 60 5E
1D99:A2 07 BD FE 1F F0 08 9D F8
1DA1:C7 05 A9 0A 9D C7 D9 CA 61
1DA9:10 F0 A5 CB C9 03 60 AD 62
1DB1:1B D4 29 03 D0 13 A9 02 2C
1DB9:C5 4B B0 0D AD 1B D4 29 3D
1DC1:01 F0 03 A9 02 2C A9 06 CD
1DC9:2C A9 01 4C C5 0F 20 5E 72
1DD1:19 A6 07 A4 08 4C AE 0F 4B
1DD9:A9 03 95 14 A9 02 95 AA C8
1DE1:A9 06 95 BE 60 93 1C 20 BA
1DE9:20 20 20 43 52 4F 53 53 3E
1DF1:52 4F 41 44 53 20 49 49 8C
1DF9:20 3A 20 9C 50 41 4E 44 09
1E01:45 4D 4F 4E 49 55 4D 20 5C
1E09:20 20 20 20 20 1C C0 1E 74
1E11:20 00 F6 2E 2E 2E 03 0F 5E
1E19:10 19 12 09 07 08 14 20 17
1E21:31 39 38 38 20 03 0F 0D 07
1E29:10 15 14 05 21 20 10 15 44
1E31:02 0C 09 03 01 14 09 0F 3C
1E39:0E 13 F2 2E 2E 2E 17 05 DF
1E41:0C 03 0F 0D 05 20 14 0F D6
1E49:20 10 01 0E 04 05 0D 0F F7
1E51:0D 09 15 0D F7 2E 2E 2E CC
1E59:10 12 05 13 13 20 06 09 22
1E61:12 05 20 02 15 14 14 0F 3C
1E69:0E 20 14 0F 20 13 14 01 9E
1E71:12 14 F5 5E 40 4C 7A 61 E9
1E79:2C 13 14 1D 1E 7F 7E 18 E8
1E81:19 12 14 11 76 13 14 01 8B
1E89:12 14 20 01 14 20 0C 05 26
1E91:16 05 0C 20 31 13 11 1D B2
1E99:14 00 04 07 13 1C 50 4C C6
1EA1:41 59 45 52 20 31 20 96 3F
1EA9:53 20 9E 4C 1F 20 20 20 0A
1EB1:48 49 47 48 20 20 1E 4C DB
1EB9:45 56 45 4C 20 1C 50 4C F9
1EC1:41 59 45 52 20 32 20 96 63
1EC9:53 20 9E 4C 00 00 00 37 87
1ED1:6E A5 02 04 05 06 08 09 88
1ED9:0B 0E 00 00 04 FC 04 FC 38
1EE1:00 00 00 00 01 FF 01 FF 28
1EE9:00 00 00 01 02 80 00 01 49
1EF1:03 80 00 01 80 80 40 20 86
1EF9:10 08 04 02 01 02 04 08 01
1F01:10 20 40 80 04 05 01 25 BA
1F09:C0 DB 08 0C 00 04 01 00 72
1F11:03 02 02 03 00 08 10 02 04
1F19:05 19 03 02 1A FF 01 00 73
1F21:30 12 1E 78 48 0C 00 00 B9
1F29:18 08 7A 5E 10 18 00 00 8B
1F31:0C 64 58 1A 26 30 00 00 2D
1F39:07 21 81 11 11 03 00 10 29
1F41:40 07 1F 0F 07 8F 00 01 AD
1F49:07 11 08 02 04 05 03 05 AF
1F51:06 04 08 01 09 01 01 00 F2
1F59:01 13 02 32 07 00 05 1F A1
1F61:80 3B 2A 09 40 05 08 10 BA
1F69:00 20 00 32 83 94 32 22 C7
1F71:44 75 55 52 73 64 85 11 48
1F79:64 11 33 04 01 21 01 88 EB
1F81:9B 5D 77 96 69 5A 58 6F 12
1F89:FF 9C 8F A7 6D C6 88 21 14
1F91:21 4A 21 06 FF 04 04 03 92
1F99:0E 00 0E FF 12 FF FF 10 41
1FA1:12 07 FF FF FF 7F 7F 11 B8
1FA9:7F 11 7F 7F 7F 11 12 13 4B
1FB1:13 7F 12 7F 7F 11 FF 11 E4
1FB9:FF 7E 75 7A AA BA 77 71 8E
1FC1:72 A9 34 BC 7B A9 7D B6 2A
1FC9:68 22 22 60 20 58 40 52 44
1FD1:48 79 40 50 58 5A 53 7A EC
1FD9:5A 68 62 78 58 62 20 21 E0
1FE1:20 05 12 1E 06 09 0C 11 13
1FE9:0E 10 1A 18 18 CF 1C 08 38
1FF1:0B 00 00 32 07 01 0D 05 34
1FF9:00 0F 16 05 12 10 12 05 09
2001:13 13 00 06 37 FF BF E0 0A
2009:20 00 FA AA A8 20 00 AA D3
2011:FF EA 80 08 AB FE 8A 80 8B
2019:08 AB BF 88 82 00 BB A0 F4
2021:00 00 00 FB A0 08 0A 00 5A
2029:AA BF 8A 88 08 AE BE 8A 8B
2031:00 28 8E BA EA 08 00 BE 2F
2039:AA E8 02 00 FF BE D0 00 E5
2041:24 80 01 38 00 09 C0 00 FC
2049:42 00 05 90 00 4D FB F7 79
2051:00 00 0D DB FB 10 20 1F 70
2059:6A FD 00 00 0A BB FD 22 AB
2061:20 0F AA 00 00 00 0E AA 91
2069:00 08 A0 0A BA 00 AB AF 3D
2071:F8 00 01 FF FB E8 80 20 F2
2079:23 FE FA 80 00 AF FB FA 24
2081:80 A0 A8 0A 08 80 A0 D8 3C
2089:0E 00 00 00 D8 0E 08 80 60
2091:A0 A8 0A 0A 80 A0 AF FB 10
2099:FA 00 00 AB FB F0 00 00 B5
20A1:AF 7A EA 14 22 BD 5F A8 66
20A9:00 02 FF BF F0 00 01 80 70
20B1:00 00 00 01 80 00 00 00 06
20B9:01 80 00 00 00 01 80 00 9F
20C1:00 00 01 80 00 00 00 01 2B
20C9:80 00 00 00 01 FF BF F0 C2
20D1:00 00 EF AF E2 02 00 BF E9
20D9:BE DA 00 21 AE BB D0 08 50
20E1:01 FF FE 00 00 20 BB FA 75
20E9:08 80 00 23 DE 0B A0 00 E4
20F1:82 00 0F A0 00 00 00 00 5F
20F9:00 00 00 00 00 00 00 00 3A
2101:00 0E E0 00 82 00 0A A0 AB
2109:00 AB BE 08 00 20 BA BA 3F
2111:08 28 00 BA EA 08 00 20 A4
2119:F7 EF F0 00 00 BB EB 80 B8
2121:00 08 EA EA 82 A8 A8 8A 04
2129:EE 82 22 A8 EE EA 80 20 96
2131:08 E8 AF E0 A2 02 FB E0 AB
2139:20 00 02 BF A1 E0 02 10 6C
2141:BD A1 08 02 10 BD A1 00 A6
2149:5A 1F B5 A0 08 02 00 F7 81
2151:5F F0 44 00 BD 40 08 14 1B
2159:00 B5 40 0B 55 FF 84 00 75
2161:0B D5 FD A0 44 1A DD 5C 0B
2169:80 00 1B FD 5C 80 04 1F 3B
2171:AD FF 0A D1 1E E0 44 81 67
2179:D1 1A D0 44 0D D1 1A 04 71
2181:44 B5 51 18 14 44 FF F5 A6
2189:D8 00 41 BE FF D8 28 05 05
2191:3A 80 48 08 05 BE 80 4A 09
2199:0B FD BE 80 58 0B F5 BE 5A
21A1:80 00 2B FD BE 20 08 0A F9
21A9:00 BE A0 08 08 00 FD BF 2C
21B1:D0 00 00 00 AD 7F D8 10 41 F7
21B9:BD 75 D8 10 41 00 00 00 5E
```

Crossroads Maze Editor

See instructions in article on page 39 before typing in.

```
C800:A9 12 8D 18 03 A9 C8 8D FB
C808:19 03 A9 DC A0 CB 20 1E 7C
C810:AB 60 48 8A 48 A2 FF E8 F6
C818:BD 74 CD F0 08 DD 04 04 32
C820:F0 F5 4C 4A FE 20 BC F6 BE
C828:20 E1 FF D0 03 4C 69 FE 6A
C830:A2 F6 9A 20 FB CA 20 3F B0
C838:C8 20 5D CB 4C 2F 0B CE A2
C840:D8 CD D0 08 A9 F0 8D D8 51
C848:CD 20 9E C8 CE D9 CD D0 73
C850:0D A9 F8 8D D9 CD AD F8 25
C858:07 49 03 8D F8 07 20 D5 F2
C860:CB C9 93 D0 03 20 88 C9 3D
C868:C9 C3 D0 03 20 A4 C9 C9 0B
C870:D6 D0 03 20 BB C9 C9 D2 6F
C878:D0 03 20 DF C9 C9 D5 D0 27
C880:03 20 D7 C9 C9 85 D0 03 3C
C888:20 0D CA C9 86 D0 03 20 01
C890:34 CA C9 87 D0 03 20 5C CF
C898:CA C9 88 D0 A2 60 AE 00 14
C8A0:D0 AC 01 D0 AD 00 DC 2D 47
C8A8:01 DC 4A B0 0C C0 42 F0 1F
C8B0:08 88 88 88 88 88 88 88 02
C8B8:88 4A B0 0C C0 F2 F0 08 B3
C8C0:C8 C8 C8 C8 C8 C8 C8 C8 52
C8C8:4A B0 0C E0 1C F0 08 CA BA
C8D0:CA CA CA CA CA CA CA 4A E1
C8D8:B0 0C E0 B4 F0 08 E8 E8 8F
C8E0:E8 E8 E8 E8 E8 E8 48 AD F5
C8E8:11 D0 10 FB 8E 00 D0 8C 9B
C8F0:01 D0 68 4A B0 1C AD DA 15
C8F8:CD D0 13 CE DA CD 20 18 5B
C900:C9 C9 20 D0 04 A5 C4 D0 0D
C908:02 A9 20 8D DB CD 20 1E 58
C910:C9 60 A9 00 8D DA CD 60 A9
C918:20 6A C9 B1 FC 60 AD 00 6F
C920:D0 C9 24 D0 07 AD 01 D0 E1
C928:C9 EA F0 3D 20 6A C9 AD 39
C930:DB CD 91 FC 8C DC CD A9 44
C938:13 38 ED DC CD 0A 18 6D 23
C940:DC CD A8 AD DB CD 91 FC DB
C948:A2 26 AD 01 D0 C9 F2 F0 01
C950:0F C9 42 D0 14 BD 50 04 6F
C958:9D C0 07 CA 10 F7 30 09 42
C960:BD C0 07 9D 50 04 CA 10 F5
C968:F7 60 AD 01 D0 38 E9 42 53
C970:4A 4A AA BD 36 CD 85 FC DD
C978:BD 37 CD 85 FD AD 00 D0 42
C980:38 E9 1C 4A 4A 4A A8 60 FF
C988:A2 2C A0 26 BD 36 CD 85 D6
C990:FC BD 37 CD 85 FD A9 20 6D
C998:91 FC 88 10 F9 CA CA 10 E6
C9A0:E9 A9 00 60 EE 20 D0 20 53
C9A8:86 CA A2 36 BD DD CD 9D 88
C9B0:90 CD CA 10 F7 CE 20 D0 66
C9B8:A9 00 60 EE 20 D0 A2 36 DB
C9C0:BD 90 CD 9D DD CD CA 10 B6
C9C8:F7 20 D8 CA A6 C8 20 E2 A3
C9D0:0E CE 20 D0 A9 00 60 A6 E4
C9D8:C8 20 E2 0E A9 00 60 A2 C6
C9E0:2C A0 26 BD 36 CD 85 FC 44
C9E8:BD 37 CD 85 FD B1 FC C9 B5
C9F0:20 D0 04 A5 C4 D0 02 A9 BA
C9F8:20 91 FC 88 10 EF CA CA C9
CA00:10 DF A9 20 8D BD 07 8D CB
CA08:99 07 A9 00 60 AE 26 04 6F
CA10:CA 8A 29 0F F0 1D 20 86 86
CA18:CA 20 D8 CA 8E 26 04 C9 C1
CA20:05 B0 06 A2 00 86 BB F0 D1
CA28:02 E9 04 AA 86 C8 20 E2 DE
CA30:0E A9 00 60 AE 26 04 E8 3C
CA38:8A 29 0F C9 09 F0 F4 20 F1
CA40:86 CA 20 D8 CA 8E 26 04 3E
CA48:C9 05 90 07 38 E9 04 A2 9A
CA50:FF 86 BB AA 86 C8 20 E2 24
CA58:0E A9 00 60 20 69 CB F0 94
CA60:1F 20 86 CA 20 D8 CA A2 A7
CA68:C7 A0 CD 20 BD FF A9 01 08
CA70:A2 08 A0 FF 20 BA FF A2 FB
CA78:BE A0 21 A9 2B 20 D8 FF DF
CA80:20 47 CB A9 00 60 48 8A A8
CA88:48 98 48 A9 50 85 FC A9 48
CA90:04 85 FD A0 00 A2 00 A9 87
CA98:80 8D DC CD A9 00 9D DD B0
CAA0:CD B1 FC C9 20 D0 04 A9 BB
CAA8:00 F0 03 AD DC CD 1D DD EB
CAB0:CD 9D DD CD C8 C0 14 90 2F
CAB8:0F A0 00 A5 FC 18 69 28 9B
CAC0:85 FC A9 00 65 FD 85 FD B9
CAC8:4E DC CD 90 D4 E8 E0 37 C2
CAD0:D0 C5 68 A8 68 AA 68 60 F6
CAD8:48 A8 48 AD 26 04 38 E9 3C
CAE0:31 0A A8 B9 64 CD 85 FC A4
CAE8:B9 65 CD 85 FD A0 36 B9 5F
CAF0:DD CD 91 FC 88 10 F8 68 C9
CAF8:A8 68 60 A2 00 8E 28 40 FD
CB00:8E 15 D0 8E 04 D4 8E 0B C2
CB08:D4 86 C6 8E DA CD A9 40 0F
CB10:8D 8A 02 BD B6 CC 9D 40 91
CB18:03 E8 10 F7 A9 0D 8D F8 82
CB20:07 A9 00 8D 10 D0 A9 01 96
CB28:8D 15 D0 8D 27 D0 A9 1C AA
CB30:8D 00 D0 A9 42 8D 01 D0 5E
CB38:A9 F0 8D D8 CD A9 F8 8D B4
CB40:D9 CD A6 C8 20 E2 0E A9 EB
CB48:4D A0 CC 20 1E AB A9 30 6D
CB50:A6 BB 10 02 A9 34 18 65 FF
CB58:C8 8D 26 04 60 20 86 CA 18
CB60:20 D8 CA A9 FF 8D 15 D0 63
CB68:60 A2 01 20 FF E9 A9 A4 9A
CB70:A0 CC 20 1E AB A9 00 8D 03
CB78:DC CD A2 01 AD DC CD 18 EA
CB80:69 0A A8 20 F0 FF A9 B3 F4
CB88:A0 CC 20 1E AB 20 D5 CB DE
CB90:C9 0D F0 3D C9 14 D0 0E 90
CB98:AE DC CD F0 F0 CE DC CD D1
CBA0:20 D2 FF 18 90 D4 AE DC 90
CBA8:CD E0 10 F0 E0 C9 20 F0 CF
CBB0:14 C9 2E F0 10 C9 30 90 32
CBB8:D4 C9 5B B0 D0 C9 41 B0 84
CBC0:04 C9 3B B0 C8 9D C7 CD 59
CBC8:EE DC CD 20 D2 FF 18 90 22
CBD0:A9 AD DC CD 60 20 9F FF E3
CBD8:20 E4 FF 60 93 0D 20 12 E2
CBE0:20 43 52 4F 53 53 52 4F 74
CBE8:41 44 53 20 49 49 2D 2D 95
CBF0:4D 41 5A 45 20 45 44 49 07
CBF8:54 4F 52 20 49 4E 53 54 59
CC00:41 4C 4C 45 44 20 0D 20 08
CC08:20 20 43 4F 50 59 52 49 EC
CC10:47 48 54 20 31 39 38 38 03
CC18:20 43 4F 4D 50 55 54 45 17
CC20:21 20 50 55 42 2E 2C 20 F4
CC28:49 4E 43 2E 0D 20 20 20 8E
CC30:20 20 20 20 20 20 20 20 C9
CC38:41 4C 4C 20 52 49 47 48 9F
CC40:54 53 20 52 45 53 45 52 56
CC48:56 45 44 0D 00 13 98 43 78
CC50:52 4F 53 53 52 4F 41 44 1D
CC58:53 20 4D 41 5A 45 20 45 CE
CC60:44 49 54 4F 52 2E 20 45 BE
CC68:44 49 54 49 4E 47 20 4D B2
CC70:41 5A 45 3A 20 05 20 9D 80
CC78:0D 97 46 31 2E 2E 50 52 77
CC80:45 56 20 20 46 33 2E 2E E1
CC88:4E 45 58 54 20 20 20 46 F2
CC90:35 2E 2E 53 41 56 45 20 59
CC98:20 46 37 2E 2E 45 58 49 1E
CCA0:54 13 0D 00 13 11 97 46 1D
CCA8:49 4C 45 4E 41 4D 45 3A 8B
CCB0:20 05 00 3F 9D 00 FF 00 7C
CCB8:00 FF 00 00 FF 00 00 FF 52
CCC0:00 00 FF 00 00 FF 00 00 5A
CCC8:FF 00 00 FF 00 00 00 00 62
CCD0:00 00 00 00 00 00 00 00 6A
CCD8:00 00 00 00 00 00 00 00 72
CCE0:00 00 00 00 00 00 00 00 7A
CCE8:00 00 00 00 00 00 00 00 82
CCF0:00 00 00 00 00 00 FF 00 8A
CCF8:00 C3 00 00 C3 00 00 C3 65
CD00:00 00 C3 00 00 C3 00 00 23
CD08:C3 00 00 FF 00 00 00 00 85
CD10:00 00 00 00 00 00 00 00 AB
CD18:00 00 00 00 00 00 00 00 B3
CD20:00 00 00 00 00 00 00 00 BB
CD28:00 00 00 00 00 00 00 00 C3
CD30:00 00 00 00 00 00 50 04 70
CD38:78 04 A0 04 C8 04 F0 04 A1
CD40:18 05 40 05 68 05 90 05 FE
CD48:B8 05 E0 05 08 06 30 06 AC
CD50:58 06 80 06 A8 06 D0 06 0F
CD58:F8 06 20 07 48 07 70 07 AC
CD60:98 07 C0 07 06 20 3D 20 DD
CD68:74 20 AB 20 E2 20 19 21 A8
CD70:50 21 87 21 03 12 0F 13 11
CD78:13 12 0F 01 04 13 20 09 C9
CD80:09 20 3A 20 10 01 0E 04 96
CD88:05 0D 0F 0E 09 15 0D 00 63
CD90:FF FF E0 00 00 BD F7 EA 1A
CD98:44 40 AC 44 0A 84 40 A6 C9
CDA0:44 00 00 40 BD F4 0A 44 7C
CDA8:40 AC 44 0A 84 40 A6 46 71
CDB0:A0 00 00 BD F4 0A 44 40 11
CDB8:AC 44 0A 84 40 A6 44 00 6A
CDC0:00 40 BF FC 08 00 00 45 B9
```

Dynamic Windows

See instructions in article on page 74 before typing in.

Program 1: Dynamic Windows

```
C000:4C 35 C0 A9 00 8D B5 C2 0C
C008:A9 01 A8 8D B2 C2 20 79 E6
C010:00 C9 2C D0 0D 20 73 00 66
C018:20 9E AD 20 AA B1 C9 00 B8
C020:D0 42 8C B2 C2 88 C4 02 1B
C028:B0 3A C6 02 20 EF C0 CE 9A
C030:B2 C2 D0 F6 60 A5 02 C9 AC
C038:15 90 04 A2 10 D0 27 A9 CE
C040:01 8D B5 C2 AD 86 02 8D A1
C048:B4 C2 A9 00 8D B0 C2 8D 4C
C050:B3 C2 8D B8 C2 20 79 00 23
C058:C9 2C F0 0D A2 0B D0 06 A1
C060:A2 16 D0 02 A2 0E 4C 37 10
C068:A4 20 73 00 20 9E AD 20 A9
C070:AA B1 C9 00 D0 EE AE B0 3D
C078:C2 98 C9 28 B0 E6 9D 1E B7
C080:C3 E8 8E B0 C2 E0 05 D0 6F
C088:CC CE 1E C3 CE 1F C3 AD 4C
C090:22 C3 29 0F 8D B6 C2 AD A4
C098:21 D0 29 0F CD B6 C2 F0 B4
C0A0:C3 AD 21 C3 C9 03 90 BC 08
C0A8:18 6D 1F C3 C9 29 B0 B4 BA
C0B0:AD 20 C3 C9 03 90 AD 18 F3
C0B8:6D 1E C3 C9 1A B0 A5 20 8C
C0C0:79 00 C9 2C D0 29 20 73 D9
C0C8:00 20 9E AD A5 0D C9 FF F5
C0D0:D0 8E A5 64 85 FB A5 65 26
C0D8:85 FC A0 00 B1 FB 8D 1D 26
C0E0:C3 C8 B1 FB 85 0D C8 B1 10
C0E8:FB 85 0E A9 19 85 16 A5 D6
C0F0:01 29 FE 85 01 A9 B9 85 1D
C0F8:FB A9 C2 85 FC A9 00 85 A7
C100:FD A9 A0 85 FE A5 02 8D 79
C108:B0 C2 F0 19 A0 02 B1 FB B0
C110:AA C8 B1 FB 0A 20 66 C2 71
C118:CA D0 F7 A9 05 20 5A C2 EE
C120:CE B0 C2 D0 E7 A0 00 AD 0C
C128:B5 C2 F0 05 B9 1E C3 91 05
C130:FB B1 FB 99 1E C3 C8 C0 89
C138:05 D0 EC AE 1E C3 AC 1F 73
C140:C3 20 34 C2 AD 20 C3 8D 63
C148:B1 C2 A0 00 A9 28 8D B0 23
C150:C2 AE 21 C3 AD B5 C2 D0 DB
C158:16 B1 FD 91 FB 20 89 C2 62
C160:A9 01 20 66 C2 B1 FD 91 CD
C168:FB 20 7E C2 4C FC C1 B1 79
C170:FB 91 FD 20 89 C2 A9 01 C3
C178:20 66 C2 B1 FB 91 FD 20 5B
C180:7E C2 AD B1 C2 CD 20 C3 16
C188:F0 04 C9 01 D0 0F AD AE 9B
C190:C2 18 6D AF C2 91 FB 20 98
C198:99 C2 4C FC C1 EC 21 C3 BA
C1A0:F0 EC E0 01 F0 E8 AD 1D A7
```

```
C1A8:C3 D0 04 A9 20 D0 E2 AD 15
C1B0:B3 C2 D0 F7 AD B8 C2 F0 1F
C1B8:06 CE B8 C2 4C AB C1 AD 78
C1C0:1D C3 F0 E7 B1 0D C9 5F 15
C1C8:D0 0C 8D B3 C2 20 53 C2 A4
C1D0:CE 1D C3 4C AB C1 C9 5E 96
C1D8:D0 08 A9 04 8D B8 C2 4C 5D
C1E0:CD C1 C9 41 90 07 C9 5B 98
C1E8:B0 03 38 E9 40 18 6D AF 18
C1F0:C2 91 FB 20 99 C2 20 53 27
C1F8:C2 CE 1D C3 A9 01 20 5A 5D
C200:C2 A9 01 20 66 C2 CE B0 FF
C208:C2 CA F0 03 4C 54 C1 A9 D0
C210:00 8D B3 C2 AD B0 C2 20 71
C218:5A C2 CE B1 C2 D0 12 20 0E
C220:A7 C2 AD B5 C2 D0 01 60 F6
C228:E6 02 AD B4 C2 8D 86 02 FD
C230:60 4C 4C C1 8E 23 C3 A9 D0
C238:00 85 FB A9 04 85 FC E0 4A
C240:00 F0 08 A9 28 20 5A C2 D6
C248:CA D0 F8 98 20 5A C2 AE AE
C250:23 C3 60 E6 0D D0 02 E6 69
C258:0E 60 18 65 FB 85 FB A9 ED
C260:00 65 FC 85 FC 60 18 65 36
C268:FD 85 FD A9 00 65 FE 85 C1
C270:FE C9 BF 90 08 20 A7 C2 BB
C278:A2 10 4C 37 A4 60 AD B6 09
C280:C2 85 FB AD B7 C2 85 FC F3
C288:60 A5 FB 8D B6 C2 18 A5 96
C290:FC 8D B7 C2 69 D4 85 FC C1
C298:60 91 FB 20 89 C2 AD 22 09
C2A0:C3 91 FB 20 7E C2 60 A5 53
C2A8:01 09 01 85 01 60 20 80 B3
```

Program 2: Dynamic Windows Demo

```
HE 10 REM COPYRIGHT 1988 COMPU
      TE! PUBLICATIONS, INC. -
       ALL RIGHTS RESERVED
BP 20 IFA=0THENA=1:POKE2,0:LOA
      D"WINDOW.OBJ",8,1
RD 30 P1=49838:P2=49839:REM PO
      KEP1,32:POKEP2,0
XS 40 FORK=1TO5:READB(K):NEXT:
      DATA 32,102,214,127,215
BM 50 POKE53280,6:POKE53281,12
      :PRINT"{BLK}{CLR}":N=102
      4
EQ 60 PRINT"{CLR}{10 DOWN}"TAB
      (12)"COPYRIGHT 1988"
MS 70 PRINTTAB(7)"COMPUTE! PUB
      LICATIONS, INC."
KH 80 PRINTTAB(11)"ALL RIGHTS
      {SPACE}RESERVED"
HP 90 FORJ=1TO25:FORK=1TO40:PO
      KEN,122:N=N+1:NEXTK:NEXT
      J
KS 100 M$="4↑ DEMO MENU44 1) O
       PEN SMALL WINDOW4 2) OP
       EN LARGE"
SF 110 M$=M$+" WINDOW4 3) CLOS
       E 1 WINDOW4 4) CLOSE AL
       L WINDOWS4 5) EXIT"
RX 120 M$=M$+" DEMO44
       {4 SPACES}MAKE SELECTIO
       N"
JD 130 POKEP1,B(INT(RND(0)*5+1
       ))
HH 140 SYS49152,13,16,12,24,2,
       M$
AR 150 POKEP1,B(INT(RND(0)*5+1
       ))
KF 160 GETX$:IFX$<"1"ORX$>"5"T
       HEN160
CQ 170 PRINT"{HOME}@@@@@@@@@@@
       @@@@@@@@@@@@"
SB 180 SYS49155:REM CLOSE MENU
        WINDOW
GS 190 ONASC(X$)-48GOTO200,240
       ,280,300,340
CP 200 IFPEEK(2)>9THENPRINT"
       {HOME}{RVS} TOO MANY WI
       NDOWS OPEN!":SYS49155,P
       EEK(2):GOTO130
HG 210 R%=RND(0)*6+2:C%=RND(0)
       *25+1:GOSUB360
XS 220 SYS49152,R%,C%,10,11,X%
       ,"4 THIS IS4 A SMALL4 W
       INDOW44{2 SPACES}PRESS4
        ANY KEY"
SB 230 GOTO320
CG 240 IFPEEK(2)>9THEN PRINT"
       {HOME}{RVS} TOO MANY WI
       NDOWS OPEN!":SYS49155,P
       EEK(2):GOTO130
BC 250 R%=RND(0)*10+2:C%=RND(0
       )*11+1:GOSUB360
RE 260 SYS49152,R%,C%,12,28,X%
       ,"444{2 SPACES}THIS IS
       {SPACE}A LARGE WINDOW44
       44↑ PRESS ANY KEY"
SE 270 GOTO320
MP 280 IFPEEK(2)=0 THEN PRINT"
       {HOME}{RVS} NO WINDOWS
       {SPACE}OPEN!{6 SPACES}"
       :GOTO130
AF 290 SYS49155:GOTO130
FA 300 IFPEEK(2)=0THEN280
XQ 310 SYS49155,PEEK(2):GOTO13
       0
CB 320 GETX$:IFX$=""THEN320
AG 330 GOTO130
JA 340 IFPEEK(2)THENSYS49155,P
       EEK(2)
BA 350 FORK=1TO2000:NEXT:PRINT
       "{CLR}":END
CH 360 X%=RND(0)*15+1:IF(PEEK(
       53281)AND15)=X%THEN360
DR 370 RETURN
```

1526 PrintScreen

See instructions in article on page 86 before typing in.

```
0801:0B 08 0A 00 9E 32 30 36 2E
0809:32 00 00 00 00 00 A0 00 B9 6E
0811:90 08 99 00 CF C8 D0 F7 D9
0819:84 FD A2 90 86 FB A2 08 B9
0821:E8 86 FC A9 D8 85 FE 78 D4
0829:A9 30 85 01 A2 07 B1 FB 6B
0831:91 FD C8 D0 F9 E6 FC E6 FB
0839:FE CA D0 F2 A9 37 85 01 FA
0841:58 20 00 CF A0 00 B9 53 4E
0849:08 F0 06 20 D2 FF C8 D0 55
0851:F5 60 0D 31 35 32 36 20 28
0859:50 52 49 4E 54 53 43 52 FC
0861:45 45 4E 20 49 53 20 4E 57
0869:4F 57 20 41 43 54 49 56 63
0871:45 2E 0D 54 4F 20 50 52 84
0879:49 4E 54 2C 20 55 53 45 51
0881:20 43 3D 2F 52 45 53 54 AF
0889:4F 52 45 2E 0D 0D 00 78 76
0891:20 8A FF AD 26 03 8D 54 DB
0899:CF AD 27 03 8D 55 CF AD 21
08A1:00 03 8D 45 CF AD 01 03 B2
08A9:8D 46 CF A9 38 8D 00 03 A1
08B1:A9 CF 8D 01 03 AD 18 03 4E
08B9:8D A1 CF AD 19 03 8D A2 60
08C1:CF 18 6E E5 CF 58 60 48 D4
08C9:A9 47 8D 26 03 A9 CF 8D 80
08D1:27 03 68 4C 00 00 48 A9 42
08D9:56 8D 18 03 A9 CF 8D 19 6C
08E1:03 68 4C 00 00 78 48 2C B5
08E9:E5 CF 30 42 38 6E E5 CF 22
08F1:8A 48 98 48 A5 01 48 A9 5C
08F9:36 85 01 A9 7F 8D 00 DC 50
0901:AD 01 DC EA CD 01 DC D0 71
0909:F7 C9 DF D0 16 AD 01 DC D8
0911:EA CD 01 DC D0 F7 C9 FF F3
0919:D0 F3 20 A3 CF 20 00 10 DD
0921:20 A3 CF 68 85 01 68 A8 56
0929:68 AA 18 6E E5 CF 68 4C 8F
0931:00 00 78 A9 10 8D BE CF F0
0939:8D C7 CF A9 D8 8D C4 CF EE
0941:8D CD CF A2 07 A0 00 A9 16
0949:30 85 01 B9 00 10 8D E6 D2
0951:CF B9 00 D8 99 00 10 AD F1
0959:E6 CF 99 00 D8 C8 D0 EB 7D
0961:EE BE CF EE C4 CF EE C7 8E
0969:CF EE CD CF CA D0 DC A9 D2
0971:36 85 01 60 AE 00 AA AA 9B
0979:AA AA AA AA AA AA AA AA 8B
0981:AA AA AA AA AA AA AA AA 93
0989:AA AA AA AA AA AA AA EE DF
0991:20 D0 A5 FB 8D 7C 10 A5 80
0999:FC 8D 7D 10 A5 FD 8D 7E FC
09A1:10 A5 FE 8D 7F 10 AD 15 8A
09A9:D0 8D 80 10 A9 00 8D 15 16
09B1:D0 A5 9D 8D 81 10 20 95 44
09B9:10 A9 E0 A0 E0 A2 20 20 56
09C1:00 15 CE 20 D0 AD 7C 10 3B
09C9:85 FB AD 7D 10 85 FC AD 69
09D1:7E 10 85 FD AD 7F 10 85 C8
09D9:FE AD 80 10 8D 15 D0 AD F7
09E1:81 10 85 9D 60 5F 60 02 86
09E9:19 60 0A 01 0D 05 13 60 F4
09F1:08 0F 13 14 60 60 02 19 11
09F9:60 0A 01 0D 05 13 60 08 EC
0A01:0F 13 14 60 AA AA AA AA E9
0A09:AA AA AA AA AA AA AA AA 1D
0A11:AA AA AA AA AA AA AA AA 25
0A19:AA AA AA AA AA AA AA AA 2D
0A21:AA AA AA AA AD 00 DD 49 A7
0A29:03 0A 0A 0A 0A 0A 0A 8D 3D
0A31:67 10 AD 18 D0 29 0E 0A 85
0A39:0A 18 6D 67 10 AA A0 36 1F
0A41:29 7F C9 10 D0 06 A2 D0 B8
0A49:A0 32 D0 08 C9 18 D0 04 29
0A51:A2 D8 A0 32 8E 68 10 8C E6
0A59:69 10 AD 18 D0 29 F0 4A B4
0A61:4A 18 6D 67 10 8D 6A 10 60
0A69:AD 11 D0 29 20 F0 0F AD D5
0A71:68 10 29 E0 A2 20 A0 E0 A8
0A79:20 00 15 4C 67 11 A9 00 D7
0A81:8D 6B 10 8D 6C 10 AD 11 22
0A89:D0 29 40 8D 6D 10 AD 69 A1
0A91:10 85 01 A9 00 85 FD A9 85
0A99:E0 85 FE AD 6B 10 85 FB DC
0AA1:AD 6C 10 18 6D 6A 10 85 E5
0AA9:FC A0 00 B1 FB AE 6D 10 05
0AB1:F0 02 29 3F 84 FC 0A 26 2A
0AB9:FC 0A 26 FC 0A 26 FC 85 CB
0AC1:FB 18 A5 FC 6D 68 10 85 11
0AC9:FC B1 FB 91 FD C8 C0 08 FD
0AD1:D0 F7 A5 FD 18 69 08 85 DC
0AD9:FD 90 02 E6 FE EE 6B 10 5A
0AE1:D0 03 EE 6C 10 AD 6B 10 E1
0AE9:C9 E8 D0 07 AD 6C 10 C9 B0
0AF1:03 F0 03 4C 0C 11 EA A9 0D
0AF9:36 85 01 AD 80 10 8D 86 6B
0B01:10 AD 1D D0 8D 87 10 AD 93
0B09:17 D0 8D 88 10 AD 10 D0 41
0B11:8D 89 10 A0 00 8C 8A 10 B3
0B19:A0 00 8C 8B 10 84 FC 8C E2
0B21:8C 10 8C 8D 10 8C 8F 10 CD
0B29:8C 8E 10 A9 F8 85 FD AD 4D
0B31:6A 10 18 69 03 85 FE AC F2
0B39:8A 10 B1 FD A2 05 0A 26 12
0B41:FC CA 10 FA 85 FB 18 A5 2C
0B49:FC 6D 67 10 85 FC 4E 89 6D
0B51:10 2E 8F 10 4E 87 10 2E CC
0B59:8D 10 4E 88 10 2E 8C 10 EE
0B61:4E 86 10 B0 03 4C 8C 12 C1
0B69:AD 8A 10 0A AA BD 00 D0 B8
0B71:38 E9 18 8D 8E 10 AD 8F 99
0B79:10 E9 00 8D 8F 10 BD 01 24
0B81:D0 38 E9 32 8D 70 10 EA A7
0B89:A0 FF 8C 90 10 A0 00 8C 1A
0B91:94 10 B1 FB 8D 92 10 8C 4F
0B99:93 10 AD 8F 10 8D 6F 10 D1
0BA1:AD 8E 10 8D 6E 10 A0 FF 02
0BA9:8C 91 10 C8 8C 74 10 0E 5D
0BB1:92 10 2E 74 10 20 EC 14 11
0BB9:A9 01 18 6D 6E 10 8D 6E FB
0BC1:10 A9 00 6D 6F 10 8D 6F 67
0BC9:10 EE 91 10 AE 91 10 EC 9F
0BD1:8D 10 D0 E1 EE 93 10 AE 7F
0BD9:93 10 E0 08 D0 C8 A0 00 45
0BE1:8C 93 10 AC 94 10 C8 B1 18
0BE9:FB 8D 92 10 8C 94 10 C0 4C
```

```
0BF1:03 D0 B3 EE 70 10 EE 90 55
0BF9:10 AE 90 10 EC 8C 10 D0 61
0C01:8C A9 03 18 65 FB 85 FB CD
0C09:A9 00 65 FC 85 FC EE 8B FB
0C11:10 AE 8B 10 E0 15 F0 03 8F
0C19:4C F9 11 EE 8A 10 AE 8A 63
0C21:10 E0 08 F0 03 4C 89 11 F6
0C29:EA A9 00 8D 71 10 85 90 61
0C31:20 90 FF 78 AD 14 03 8D 56
0C39:82 10 AD 15 03 8D 83 10 03
0C41:AD 18 03 8D 84 10 AD 19 48
0C49:03 8D 85 10 A9 B4 8D 18 4B
0C51:03 8D FA FF 8D FE FF A9 BF
0C59:14 8D 19 03 8D FB FF 8D 1C
0C61:FF FF A9 C3 8D 14 03 A9 57
0C69:14 8D 15 03 A9 0A 20 19 90
0C71:15 20 B7 FF 29 83 F0 03 4F
0C79:4C 01 14 A2 0A A9 0D 20 D5
0C81:46 15 A9 0A 20 29 15 A9 51
0C89:06 20 19 15 A2 06 A9 14 B5
0C91:20 46 15 A9 06 20 29 15 A0
0C99:A9 07 20 19 15 A9 05 20 57
0CA1:19 15 A9 14 8D 66 10 A9 D1
0CA9:07 20 39 15 A0 00 A9 20 3E
0CB1:20 A8 FF C8 C0 14 D0 F6 7F
0CB9:A9 00 8D 6E 10 8D 6F 10 E4
0CC1:A9 00 8D 7B 10 AD 71 10 42
0CC9:8D 70 10 A9 00 8D 76 10 94
0CD1:8D 73 10 20 D5 14 4E 74 A1
0CD9:10 2E 73 10 EE 70 10 EE 3D
0CE1:76 10 AE 76 10 E0 08 D0 5B
0CE9:EA AD 73 10 AE 7B 10 9D 73
0CF1:56 10 EE 6E 10 D0 03 EE B6
0CF9:6F 10 E8 8E 7B 10 E0 08 B9
0D01:D0 C3 A2 00 BD 56 10 DD 0E
0D09:5E 10 D0 07 E8 E0 08 D0 8C
0D11:F3 F0 34 A2 07 A9 8D 20 2C
0D19:46 15 A9 05 20 39 15 A0 D1
0D21:00 B9 56 10 99 5E 10 20 FB
0D29:A8 FF C8 C0 08 D0 F2 20 46
0D31:AE FF A9 07 20 39 15 A0 F8
0D39:00 A9 20 20 A8 FF C8 CC 67
0D41:66 10 D0 F5 20 AE FF A2 6A
0D49:07 A9 FE 20 46 15 AE 66 7D
0D51:10 E8 8E 66 10 E0 3C F0 53
0D59:03 4C 31 13 A2 07 A9 0D F0
0D61:20 46 15 AD 71 10 18 69 FF
0D69:08 8D 71 10 C9 C8 B0 03 EF
0D71:4C 13 13 A2 07 A9 0D 20 1C
0D79:46 15 A9 07 20 29 15 A9 1B
0D81:05 20 29 15 A9 0A 20 19 6B
0D89:15 A9 0D A2 0A 20 46 15 D6
0D91:A9 0A 20 29 15 78 AD 82 02
0D99:10 8D 14 03 AD 83 10 8D FA
0DA1:15 03 AD 84 10 8D 18 03 EE
0DA9:AD 85 10 8D 19 03 60 A9 16
0DB1:75 85 FD A9 10 85 FE A9 80
0DB9:00 8D 75 10 AD 70 10 C9 FF
0DC1:C8 B0 10 AD 6F 10 C9 01 99
0DC9:90 0A D0 07 AD 6E 10 C9 4A
0DD1:40 90 01 60 AD 70 10 4A EF
0DD9:4A 4A 8D 77 10 AD 6F 10 FA
0DE1:4A AD 6E 10 6A 4A 4A 8D F9
0DE9:78 10 AD 70 10 29 07 8D C1
0DF1:79 10 AD 6E 10 49 FF 29 38
0DF9:07 8D 7A 10 A9 01 AE 7A 74
0E01:10 F0 04 0A CA D0 FC 8D A3
0E09:7A 10 A9 00 85 FE AD 78 97
0E11:10 0A 26 FE 0A 26 FE 0A 5D
0E19:26 FE 18 6D 79 10 85 FD F6
0E21:A5 FE 69 E0 85 FE AE 77 08
0E29:10 F0 10 18 A9 40 65 FD 24
0E31:85 FD A9 01 65 FE 85 FE 06
0E39:CA D0 F0 78 A0 00 A9 35 22
0E41:85 01 60 78 48 AD 0D DD E4
0E49:AD 0D DC A9 8F 8D 19 D0 6B
0E51:68 40 78 AD 0D DD AD 0D E3
0E59:DC A9 8F 8D 19 D0 68 A8 9E
0E61:68 AA 68 40 A9 00 8D 74 4A
0E69:10 20 20 14 B1 FD 2D 7A 35
0E71:10 F0 03 EE 74 10 A9 36 8E
0E79:85 01 60 AD 74 10 F0 0A 4F
0E81:20 20 14 B1 FD 0D 7A 10 7C
0E89:91 FD A9 36 85 01 60 85 FC
0E91:FC 84 FE A0 00 84 FB 84 C5
0E99:FD B1 FB 91 FD C8 D0 F9 68
0EA1:E6 FC E6 FE CA D0 F2 60 1D
0EA9:48 A9 04 20 B1 FF 68 09 3E
0EB1:F0 20 93 FF 20 AE FF 60 DC
0EB9:48 A9 04 20 B1 FF 68 09 4E
0EC1:E0 20 93 FF 20 AE FF 60 E4
0EC9:48 A9 04 20 B1 FF 68 09 5E
0ED1:60 20 93 FF 60 48 8A 20 F1
0ED9:39 15 68 20 A8 FF 20 AE 1B
0EE1:FF 60 00 00 00 00 00 00 16
```

Quick!

See instructions in article on page 82 before typing in.

Program 1: Quick!

```
9B00:4C 0B 9B A9 A5 A2 F4 A0 70
9B08:00 F0 45 A9 00 85 33 85 C0
9B10:37 A9 9B 85 34 85 38 D0 12
9B18:31 0D 51 55 49 43 4B 20 B8
9B20:44 49 53 41 42 4C 45 44 5C
9B28:0D 00 0D 51 55 49 43 4B 3E
9B30:20 41 43 54 49 56 41 54 EF
9B38:45 44 0D 00 4D 2D 57 C0 53
9B40:06 20 43 52 38 38 5A 41 A8
9B48:4B 59 A0 11 A9 62 A2 9B 58
9B50:8D 30 03 8E 31 03 B9 19 C5
9B58:9B F0 06 20 16 E7 C8 D0 0F
9B60:F5 60 85 93 A5 BA C9 08 48
9B68:90 1F A2 0F A9 A0 9D 00 FF
9B70:9F CA 10 FA A0 00 A2 00 26
9B78:B1 BB C9 30 D0 07 C8 B1 99
9B80:BB C9 3A F0 13 C9 24 D0 37
9B88:05 A5 93 4C A5 F4 B1 BB 03
9B90:C9 0D F0 09 9D 00 9F E8 B3
9B98:C8 C4 B7 90 F1 20 E0 9C D3
9BA0:20 8F 9C A9 55 20 A8 FF 76
9BA8:A9 43 20 A8 FF 20 AE FF F1
9BB0:20 AF F5 A9 13 8D 00 DD E9
9BB8:20 E1 FF F0 1B AD 00 DD F4
9BC0:C9 13 D0 F4 A9 0B 8D 11 B0
9BC8:D0 20 99 9C A4 C3 A6 C4 B3
9BD0:AD 00 9F 10 08 A9 04 2C EE
9BD8:A9 00 38 B0 7D 48 29 40 96
9BE0:8D 00 9F 68 29 07 C9 02 54
9BE8:08 D0 0A A5 B9 F0 06 AC 3E
9BF0:02 9F AE 03 9F 84 AE 86 0A
9BF8:AF 28 D0 07 A2 04 D0 05 68
9C00:20 99 9C A2 02 A0 00 AD AD
9C08:00 9F 30 67 D0 04 AC 01 96
9C10:9F C8 84 64 A5 93 F0 03 82
9C18:4C 6A 9C A4 AF C0 9A 90 36
9C20:1A F0 0D C0 A0 B0 14 20 60
9C28:5A 9C 20 03 9B 4C 89 9B A6
9C30:8A 38 E5 64 49 FF 18 65 9F
9C38:AE B0 EC A0 00 BD 00 9F 33
9C40:91 AE C8 E8 E4 64 D0 F5 E5
9C48:98 18 65 AE 85 AE 90 02 75
9C50:E6 AF AD 00 9F D0 A9 85 B7
9C58:90 18 A2 1B 8E 11 D0 A2 E2
9C60:33 8E 00 DD A6 AE A4 AF 9D
9C68:58 60 A0 00 BD 00 9F D1 F8
9C70:AE F0 13 98 18 65 AE 85 62
9C78:39 A5 AF 69 00 85 3A A9 78
9C80:1D 45 93 4C DA 9B C8 E8 90
9C88:E4 64 D0 E0 4C 48 9C A5 D7
9C90:BA 20 B1 FF A9 FF 4C 93 DE
9C98:FF A0 00 A5 91 C9 7F D0 D7
9CA0:05 68 68 4C D8 9B AD 00 D8
9CA8:DD C9 93 D0 EE 78 A9 03 72
9CB0:8D 00 DD AD 00 DD C9 43 95
9CB8:D0 F9 A2 04 CA D0 FD A2 A5
9CC0:04 AD 00 DD 0A 08 0A 26 EF
9CC8:95 28 26 95 CA D0 F2 A9 1E
9CD0:13 8D 00 DD A5 95 49 FF EA
9CD8:99 00 9F C8 D0 D0 58 60 3A
9CE0:A9 0F 85 FF A9 31 85 FB 7C
9CE8:A9 9D 85 FC A9 00 A0 05 72
9CF0:8D 3F 9B 8C 40 9B 20 8F 3D
9CF8:9C A0 00 B9 3C 9B 20 A8 7D
9D00:FF C8 C0 06 90 F5 A0 00 83
9D08:B1 FB 20 A8 FF C8 C0 20 6E
9D10:90 F6 20 AE FF A5 FB 18 E6
9D18:69 20 85 FB 90 02 E6 FC D7
9D20:18 AD 3F 9B AC 40 9B 69 7B
9D28:20 90 01 C8 C6 FF D0 C0 DC
9D30:60 A0 00 8C 00 18 A0 84 B2
9D38:84 B4 A9 F0 8D 4F 02 20 F4
9D40:42 D0 A0 02 8C 00 18 78 12
9D48:88 A9 12 8D 00 03 8C 01 73
9D50:03 20 ED 05 A0 03 84 3C 79
9D58:A9 02 85 3B A0 00 B1 3B F0
9D60:10 11 A0 03 B9 CC 06 C9 03
9D68:2A F0 26 C9 3F F0 1D D1 20
9D70:3B F0 19 A5 3B 18 69 20 30
9D78:90 E0 AC 00 03 F0 03 4C F7
9D80:20 05 CE 00 03 20 9A 05 B9
9D88:58 4C 45 D9 C8 C0 13 90 49
9D90:D3 A0 00 B1 3B 29 07 48 CD
9D98:C8 B1 3B 8D 00 03 C8 B1 34
9DA0:3B 8D 01 03 20 ED 05 68 58
9DA8:AE 00 03 F0 02 09 40 8D EC
9DB0:00 03 8A 48 20 9A 05 68 60
9DB8:B0 10 8D 00 03 F0 0B 20 14
9DC0:ED 05 20 9A 05 AD 00 03 C3
9DC8:D0 F5 60 A0 00 8C 00 18 4A
9DD0:AD 00 18 4A 90 04 8C 00 38
9DD8:03 60 29 02 D0 F2 AD 00 A0
9DE0:18 29 04 D0 F9 B9 00 03 B9
9DE8:85 85 A2 04 A9 02 8D 00 4D
9DF0:18 A9 00 06 85 2A 0A 06 F1
9DF8:85 2A 0A 8D 00 18 CA D0 62
9E00:F0 A2 03 CA D0 FD A9 00 3D
9E08:8D 00 18 C8 F0 09 AD 00 A2
9E10:18 29 04 D0 C9 F0 F7 A9 DC
9E18:02 8D 00 18 18 60 AC 01 D7
9E20:03 84 07 AD 00 03 C5 06 59
9E28:85 06 F0 10 A9 B0 85 00 E3
9E30:58 24 00 30 FC 78 A5 00 BA
9E38:C9 01 D0 58 A9 03 8D FF AE
9E40:06 A9 EE 8D 0C 1C A9 06 CB
9E48:85 32 A9 00 85 33 85 30 3E
9E50:A9 03 85 31 20 75 06 50 1A
9E58:FE B8 AD 01 1C 99 00 03 53
9E60:C8 D0 F4 A0 BA 50 FE B8 AC
9E68:AD 01 1C 99 00 01 C8 D0 40
9E70:F4 20 E0 F8 A5 38 C5 47 BC
9E78:F0 04 A9 22 D0 09 20 E9 5B
9E80:F5 C5 3A F0 09 A9 23 CE 84
9E88:FF 06 D0 A0 F0 09 A9 EC 57
9E90:8D 0C 1C 60 18 69 18 85 3D
9E98:44 A9 FE 8D 00 03 20 9A 02
9EA0:05 A5 44 4C C8 C1 20 7B 20
9EA8:06 4C B7 06 A5 12 85 16 E9
9EB0:A5 13 85 17 A5 06 85 18 10
9EB8:A5 07 85 19 A9 00 45 16 BA
9EC0:45 17 45 18 45 19 85 1A 44
9EC8:20 34 F9 A2 5A 20 B7 06 55
9ED0:50 FE B8 AD 01 1C D9 24 38
9ED8:00 D0 06 C8 C0 08 D0 F0 50
9EE0:60 CA D0 E9 A9 20 D0 AF D8
9EE8:A9 D0 8D 05 18 A9 21 2C 07
9EF0:05 18 10 A3 2C 00 1C 30 BC
9EF8:F6 AD 01 1C B8 A0 00 60 A7
```

Program 2: New Quick

```
HE 10 REM COPYRIGHT 1988 COMPU
      TE! PUBLICATIONS, INC. -
       ALL RIGHTS RESERVED
BE 20 PRINT"{CLR}{N}{H}
      {3 SPACES}COPYRIGHT 1988
       COMPUTE! PUB., INC."
JD 30 PRINTTAB(11)"ALL RIGHTS
      {SPACE}RESERVED":PRINT"
      {2 DOWN}"
MP 40 PRINTTAB(12)"QUICK RELOC
      ATOR{2 DOWN}"
HQ 50 PRINT"A COPY OF QUICK MU
      ST BE RESIDENT IN"
JG 60 PRINT"MEMORY BEFORE RELO
      CATING.{DOWN}"
XK 70 INPUT"SOURCE BLOCK(DEC)"
      ;OA
```

```
FJ 80 INPUT"{DOWN}DESTINATION
      {SPACE}BLOCK";M
CE 90 IFM>203OR(M<192ANDM>155)
      ORM<54THEN80
QE 100 IFM=0ATHEN210
HF 110 OA=OA*256:SA=M*256
KG 120 IFM<160THENPOKE56,M:POK
      E52,M:POKE51,0:POKE55,0
RH 130 FORI=0TO1023:POKESA+I,P
      EEK(OA+I):NEXT
PB 140 IFM<160THENPOKE1+SA,11:
      GOTO160
GH 150 POKE1+SA,74:SS=SA:MM=M
FK 160 SS=SA:MM=M:II=15:GOSUB3
      40
EM 170 SS=SA:MM=MM+1:II=9:GOSU
      B340
JM 180 MM=MM+1:POKESS+233,MM
JH 190 SS=SA:MM=MM+2:II=13:GOS
      UB340
QM 200 POKE SS+36,MM+1:POKESS+
      30,M-1
AJ 210 PRINT"{DOWN}SAVE FILE [
      {RVS}Y{OFF}/{RVS}N{OFF}
      ] ";
PE 220 GETS$:IFS$<>"N"ANDS$<>"
      Y"THEN220
HB 230 PRINTS$:IFS$="N"THENEND
FP 240 PRINT:INPUT"FILENAME [W
      ITHOUT '0:']";N$
DP 250 N$="0:"+N$
DE 260 L=LEN(N$):LM=0:HM=M+4:M
      M=LM+HM*256:POKE157,255
FJ 270 FORI=0TOL-1:POKEMM+I,AS
      C(MID$(N$,I+1,1)):NEXT:
      POKEMM+L,13
CG 280 POKE780,L+1:POKE781,LM:
      POKE782,HM:SYS189+255*2
      56
XP 290 POKE780,1:POKE781,8:POK
      E782,1:SYS186+255*256
BM 300 POKE251,0:POKE252,M:POK
      E780,251:POKE781,0:POKE
      782,M+4:SYS216+255*256
EH 310 OPEN15,8,15:INPUT#15,A,
      B$,C,D:CLOSE15
KH 320 IFA<>0THENPRINT:PRINTA;
      B$;C;D
DM 330 END
KD 340 FORI=1TOII:READA:IFA<0T
      HENSS=SS+256:NEXT
PD 350 POKESS+A,MM
SQ 360 NEXT:RETURN
FB 370 DATA2,18,79,88,-1,44,47
      ,133,165,242,245,253,-1
      ,35,38
RK 380 DATA159,162,203,-1,2,26
      ,41,142,248
BH 390 DATA112,150,210,226,241
      ,244,-1,9,16,63,84,110,
      218
```

Machine Language Programming

Article on page 60.

```
RC 100 DATA 162,0,189,92,32,32
       ,210,255
PG 110 DATA 232,201,32,208,245
       ,162,0
JB 120 DATA 142,0,33,32,207,25
       5,174,0
GD 130 DATA 33,157,1,33,232,14
       2,0
QS 140 DATA 33,201,13,208,239,
       169,13
KD 150 DATA 32,210,255,162,0,1
       89,95,32
SQ 160 DATA 32,210,255,232,201
       ,32,208,245
QX 170 DATA 32,228,255,201,49,
       144,249
CX 180 DATA 201,58,176,245,32,
       210,255
CB 190 DATA 41,15,168,169,13,3
       2,210,255
RK 200 DATA 162,0,189,1,33,32,
       210,255,232
HH 210 DATA 201,13,208,245,136
       ,208,240,96
GC 220 DATA 84,63,32,78,63,32
KR 230 FOR J=8192 TO 8289
AM 240 READ X:T=T+X
RS 250 POKE J,X
EG 260 NEXT J
KH 270 IF T<>12810 THEN STOP
EE 280 SYS 8192
```

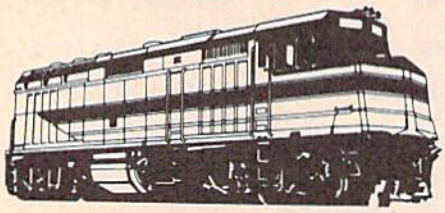
Double Take

Article on page 41.

```
HE 10 REM COPYRIGHT 1988 COMPU
      TE! PUBLICATIONS, INC. -
       ALL RIGHTS RESERVED
PH 20 POKE646,0:POKE53280,15:P
      OKE53281,15:PRINT"{CLR}"
      ;TAB(11)"COPYRIGHT 1988"
RD 25 PRINTTAB(6)"COMPUTE! PUB
      LICATIONS, INC."
FK 30 PRINTTAB(9)"ALL RIGHTS R
      ESERVED{3 DOWN}"
DQ 40 FORI=1TO9:READA$:NEXT:FO
      RI=1TO380:READA:X=X+A:NE
      XT
QR 50 IFX<>14781THENPRINT"ERRO
      R IN DATA STATEMENT.":ST
      OP
PF 60 RESTORE:GOTO130
RC 70 GOSUB1740:PRINT"{BLK}
      {HOME}{4 DOWN}"SPC(14)"I
      T'S A DRAW":GOTO90
EX 80 GOSUB1740:POKE646,CL(PL)
      :PRINT"{HOME}{4 DOWN}"SP
      C(8)"PLAYER"PL+1"{LEFT}
      {SPACE}IS THE WINNER"
MB 90 POKE646,I:PRINT"{HOME}
      {22 DOWN}"SPC(8)"PRESS F
      IREBUTTON TO PLAY"
RS 100 I=I+1:IFI>=15THENI=0
EM 110 JB=16-PEEK(56320)AND16:
       IFJB=0THENRUN
GR 120 GOTO90
KD 130 GOSUB1740:PRINT"{CLR}";
       :POKE53280,15:POKE53281
       ,15:POKE53289,5
KC 140 PRINTSPC(13)"{BLK}{A}I
       {DOWN}{2 LEFT}BBOUBLE
       {UP}C{R}CCC{DOWN}":PRIN
       TSPC(13)"{Z}K{5 SPACES}
       {UP}{2 SPACES}BAKE"
FA 150 PRINTSPC(22)"{Z}":PRINT
       "{8 DOWN}"SPC(12)"{RVS}
       1{OFF} OR {RVS}2{OFF} J
       OYSTICKS":C$=""
DQ 160 POKE198,0:WAIT198,1:GET
       C$:IFC$<"1"ORC$>"2"THEN
       160
PS 170 F2=VAL(C$)-1
QQ 180 PRINTSPC(10)"{UP}P L E
       {SPACE}A S E{2 SPACES}W
        A I T"
FE 190 DIMDU(25),B(2,25),FL(2,
       25),A$(2,25),AN(2,25),Z
       Z(25),BB(25,4),BC(2,30)
AK 200 CR$="{RVS}TU{DOWN}
       {2 LEFT}VW":DN=189:UP=9
       3:LM=45:RM=126
QE 210 FORI=1TO9:READTE$(I):NE
       XT
AD 220 FORI=1TO25:BC(1,I)=2:BC
       (2,I)=2:NEXT
FG 230 TV=53248:POKETV+21,4:PO
       KE2042,11:FORI=0TO62:RE
       ADQ:POKE704+I,Q:NEXT
HK 240 ML$="{I}"+CHR$(8)+"{X}<
       "+CHR$(3)+"{2}XJ"+CHR$(
       16)+CHR$(248)+"L{B}{T}"
       :POKE835,0
FD 250 POKE53272,PEEK(53272)AN
       D240OR12
PQ 260 POKE836,208:POKE830,0:P
       OKE831,216:POKE828,0:PO
       KE829,56:POKE56334,0
SA 270 POKE1,51:ML$=ML$:SYS(PE
       EK(51)+256*PEEK(52)):PO
       KE1,55:POKE56334,1
RQ 280 FORI=13312TO13503:READJ
       :POKEI,J:NEXT
GH 290 FORI=1TO25:READZZ(I):NE
       XT
DH 300 FORI=1TO25:FORX=1TO4:RE
       ADBB(I,X):NEXT:NEXT
DR 310 FORQ=1TO2:FORI=1TO25:DU
       MMY(I)=1:NEXT:FORI=1TO2
       5
PH 320 X=INT(25*RND(1))+1:IFDU
       MMY(X)=0THEN320
QG 330 B(Q,I)=X:DUMMY(X)=0:NEX
       T
AK 340 FORI=1TO25:IFB(Q,I)<10T
       HENA$(Q,I)=TE$(B(Q,I)):
       GOTO360
KG 350 A$(Q,I)=RIGHT$(STR$(B(Q
       ,I)),2)
CK 360 NEXTI,Q
JF 370 FORI=1TO25:AN(1,I)=B(1,
       I):FORZ=1TO25
XH 380 IFB(2,Z)=AN(1,I)THENAN(
       2,I)=Z:Z=25:NEXTZ,I:GOT
       O400
EH 390 NEXTZ
FH 400 PRINT"{HOME}{6 DOWN}{8}
       {2 RIGHT}";:A=1:B=5
CH 410 FORI=1TO5:FORW=ATOB
PQ 420 PRINT"{RIGHT}"A$(1,W);:
       NEXT:PRINT"{5 RIGHT}";
KG 430 FORW=ATOB:PRINT"{RIGHT}
       "A$(2,W);:NEXT:PRINT"
       {DOWN}"
HF 440 A=A+5:B=B+5:PRINT"
       {DOWN}{2 RIGHT}";:NEXTI
JX 450 POKE53280,11:POKE53281,
       11:CL(0)=14:CL(1)=7
QD 460 PRINT"{HOME}{4 DOWN}
       {BLK}"
BJ 470 PRINT"{2 SPACES}{A}CC
       {R}CC{R}CC{R}CC{R}CC{S}
       {4 SPACES}{A}CC{R}CC{R}
       CC{R}CC{R}CC{S}"
DG 480 PRINT"{2 SPACES}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{4 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B"
XG 490 PRINT"{2 SPACES}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{4 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B"
QX 500 FORI=1TO4:PRINT"
       {2 SPACES}{Q}CC+CC+CC+C
       C+CC{W}{4 SPACES}{Q}CC+
       CC+CC+CC+CC{W}"
CF 510 PRINT"{2 SPACES}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{4 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B"
```

```
JD 520 PRINT"{2 SPACES}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{4 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B{2 RIGHT}B
       {2 RIGHT}B":NEXT
AE 530 PRINT"{2 SPACES}{Z}CC
       {E}CC{E}CC{E}CC{E}CC{X}
       {4 SPACES}{Z}CC{E}CC{E}
       CC{E}CC{E}CC{X}{HOME}";
MG 540 QX=95:QY=45:MT=1:GOSUB1
       020
DK 550 POKETV+4,QY:POKETV+5,QX
       :POKE53271,PEEK(53271)O
       R(2↑2)
GP 560 POKE53289,CL(PL):GOSUB8
       90
PS 570 IFBC(1,MT)<>2THENPOKE53
       280,CL(PL):FORI=1TO1000
       :NEXT:POKE53280,11:GOTO
       560
HE 580 POKE646,CL(PL):UV=MT
GG 590 P=MT:Y1=5:GOSUB810:PRIN
       TCR$:BC(1,MT)=PL:MM=MT:
       XR=R1
SB 600 IFBB(MT,1)=0THEN620
MA 610 IFBC(1,BB(MT,1))=-PL+1A
       NDBC(1,BB(MT,2))=-PL+1T
       HEN Y1=5:GOTO650
RR 620 IFBB(MT,3)=0THEN690
QX 630 IFBC(1,BB(MT,3))=-PL+1A
       NDBC(1,BB(MT,4))=-PL+1T
       HENY1=5:GOTO670
HB 640 GOTO690
EE 650 BC(1,BB(MT,1))=PL:BC(1,
       BB(MT,2))=PL:P=BB(MT,1)
MJ 660 GOSUB810:PRINTCR$:P=BB(
       MT,2):GOSUB810:PRINTCR$
       :GOTO620
RC 670 BC(1,BB(MT,3))=PL:BC(1,
       BB(MT,4))=PL:P=BB(MT,3)
SS 680 GOSUB810:PRINTCR$:P=BB(
       MT,4):GOSUB810:PRINTCR$
DX 690 P=AN(2,MT):PP=P:KT=1:GO
       SUB800:YR=R2:BC(2,P)=PL
       :TM=P:IFBB(TM,1)=0THEN7
       10
JM 700 IFBC(2,BB(TM,1))=-PL+1A
       NDBC(2,BB(TM,2))=-PL+1T
       HEN740
PA 710 IFBB(TM,3)=0THEN780
DM 720 IFBC(2,BB(TM,3))=-PL+1A
       NDBC(2,BB(TM,4))=-PL+1T
       HEN760
XE 730 GOTO780
PG 740 BC(2,BB(TM,1))=PL:BC(2,
       BB(TM,2))=PL:P=BB(TM,1)
       :KT=1
HS 750 GOSUB810:PRINTCR$:P=BB(
       TM,2):KT=1:GOSUB810:PRI
       NT CR$:GOTO710
DJ 760 BC(2,BB(TM,3))=PL:BC(2,
       BB(TM,4))=PL:P=BB(TM,3)
       :KT=1
KS 770 GOSUB810:PRINTCR$:P=BB(
       TM,4):KT=1:GOSUB810:PRI
       NTCR$
GB 780 GOSUB1460:PL=-PL+1:TURN
       =TURN+1:IFTURN=25THEN70
FK 790 GOTO560
AS 800 GOSUB810:PRINTCR$:RETUR
       N
SH 810 POKE646,CL(PL):IFP<6THE
       NCK=1:KC=1:GOTO860
RG 820 IFP<11THENCK=2:KC=4:GOT
       O860
KR 830 IFP<16THENCK=3:KC=7:GOT
       O860
MA 840 IFP<21THENCK=4:KC=10:GO
       TO860
DG 850 CK=5:KC=13
QG 860 IFKTTHENTEMP=5*CK-P:XX=
       (38-TE*3)-3:YY=Y1+KC:GO
       SUB880:KT=0:R2=CK:RETUR
       N
SF 870 TEMP=5*CK-P:XX=(24-TE*3
       )-9:YY=Y1+KC:GOSUB880:R
       1=CK:RETURN
BC 880 POKE783,0:POKE781,YY:PO
       KE782,XX:SYS65520:RETUR
       N
RK 890 JY=15-(PEEK(56320+PL*F2
       )AND15):JB=PEEK(56320+P
       L*F2)AND16
HS 900 IFJB=0THENRETURN
DG 910 IFJY=8THENJY=3
JM 920 IFJY<1ORJY>4THEN890
EE 930 ONJYGOTO940,960,980,100
       0
EC 940 IFQX-4<UPTHEN890
ED 950 QX=QX-24:MT=MT-5:GOSUB1
       020:GOTO890
SG 960 IFQX+4>DNTHEN890
GR 970 QX=QX+24:MT=MT+5:GOSUB1
       020:GOTO890
CD 980 IFQY+4>RMTHEN890
KJ 990 QY=QY+24:MT=MT+1:GOSUB1
       020:GOTO890
FJ 1000 IFQY-4<LMTHEN890
FE 1010 QY=QY-24:MT=MT-1:GOSUB
       1020:GOTO890
HG 1020 POKETV+4,QY:POKETV+5,Q
       X:RETURN
MG 1030 DATA "01","02","03","0
       4","05","06","07","08"
       ,"09"
QG 1040 DATA255,255,252,192,0,
       12,192,0
JG 1050 DATA12,192,0,12,192,0,
       12,192
HH 1060 DATA0,12,192,0,12,192,
       0,12
BE 1070 DATA192,0,12,192,0,12,
       255,255
AP 1080 DATA252,0,0,0,0,0,0,0
EK 1090 DATA0,0,0,0,0,0,0,0
FM 1100 DATA0,0,0,0,0,0,0,0
CM 1110 DATA0,0,0,0,0,0,0
DH 1120 DATA 0,0,0,0,60,102,10
       2,110
PB 1130 DATA 0,0,0,0,24,24,56,
       24
GB 1140 DATA 0,0,0,0,60,102,6,
       12
MG 1150 DATA 0,0,0,0,60,102,6,
       28
HK 1160 DATA 0,0,0,0,6,14,30,5
       4
PK 1170 DATA 0,0,0,0,126,96,96
       ,124
AM 1180 DATA 0,0,0,0,60,102,96
       ,96
BQ 1190 DATA 0,0,0,0,126,102,1
       2,24
BB 1200 DATA 0,0,0,0,60,102,10
       2,60
PX 1210 DATA 0,0,0,0,60,102,10
       2,102
FG 1220 DATA 118,102,102,60,0,
       0,0,0
ES 1230 DATA 24,24,24,126,0,0,
       0,0
JC 1240 DATA 12,48,96,126,0,0,
       0,0
KB 1250 DATA 28,6,102,60,0,0,0
       ,0
XR 1260 DATA 102,127,6,6,0,0,0
       ,0
HH 1270 DATA 6,6,102,60,0,0,0,
       0
KD 1280 DATA 124,102,102,60,0,
       0,0,0
KR 1290 DATA 24,24,24,24,0,0,0
       ,0
JS 1300 DATA 60,102,102,60,0,0
       ,0,0
DC 1310 DATA 62,6,102,60,0,0,0
       ,0
MD 1320 DATA 0,7,31,63,127,127
       ,255,255
MX 1330 DATA 0,224,248,252,254
       ,254,255,255
ME 1340 DATA 255,255,127,127,6
       3,31,7,0
RS 1350 DATA 255,255,254,254,2
       52,248,224,0
EG 1360 DATA 2,3,3,3,2
MM 1370 DATA 3,4,4,4,3
XP 1380 DATA 3,4,4,4,3
QJ 1390 DATA 3,4,4,4,3
QH 1400 DATA 2,3,3,3,2
SX 1410 DATA 2,6,0,0,1,3,0,0,2
       ,4,0,0,3,5,0,0,4,10,0,
       0
RC 1420 DATA 1,11,0,0,6,8,2,12
       ,7,9,3,13,8,10,4,14,5,
       15,0,0
KR 1430 DATA 6,16,0,0,11,13,7,
       17,12,14,8,18,13,15,9,
       19,10,20,0,0
DR 1440 DATA 11,21,0,0,16,18,1
       2,22,17,19,13,23,18,20
       ,14,24,15,25,0,0
SQ 1450 DATA 16,22,0,0,21,23,0
       ,0,22,24,0,0,23,25,0,0
       ,20,24,0,0
DD 1460 FORD=1TO2
PB 1470 JJ=0
EQ 1480 FORI=1TO5:GOSUB1530:NE
       XTI:GOSUB1560
DF 1490 FORI=6TO10:GOSUB1530:N
       EXTI:GOSUB1560
RK 1500 FORI=11TO15:GOSUB1530:
       NEXTI:GOSUB1560
GG 1510 FORI=16TO20:GOSUB1530:
       NEXTI:GOSUB1560
PB 1520 FORI=21TO25:GOSUB1530:
       NEXTI:GOSUB1560:NEXTD:
       GOTO1580
SG 1530 IFBC(D,I)=2THENJJ=JJ+1
       5:GOTO1550
MC 1540 JJ=JJ+BC(D,I)
ED 1550 RETURN
KA 1560 IFJJ/5=PLTHEN80
JR 1570 JJ=0:RETURN
DP 1580 FORD=1TO2
PK 1590 JJ=0
QQ 1600 FORI=1TO21STEP5:GOSUB1
       650:NEXTI:GOSUB1680
KS 1610 FORI=2TO22STEP5:GOSUB1
       650:NEXTI:GOSUB1680
HD 1620 FORI=3TO23STEP5:GOSUB1
       650:NEXTI:GOSUB1680
CF 1630 FORI=4TO24STEP5:GOSUB1
       650:NEXTI:GOSUB1680
JS 1640 FORI=5TO25STEP5:GOSUB1
       650:NEXTI:GOSUB1680:NE
       XTD:GOTO1700
FA 1650 IFBC(D,I)=2THENJJ=JJ+1
       5:GOTO1670
MM 1660 JJ=JJ+BC(D,I)
EP 1670 RETURN
KJ 1680 IFJJ/5=PLTHEN80
HF 1690 JJ=0:RETURN
QA 1700 FORD=1TO2
XB 1710 IFBC(D,1)=PLANDBC(D,7)
       =PLANDBC(D,13)=PLANDBC
       (D,19)=PLANDBC(D,25)=P
       LTHEN80
HG 1720 IFBC(D,5)=PLANDBC(D,9)
       =PLANDBC(D,13)=PLANDBC
       (D,17)=PLANDBC(D,21)=P
       LTHEN80
AD 1730 X=(YR*5)-4:C1=PP-((YR*
       5)-4)+1:JJ=0:I=X:NEXT
       {SPACE}D:RETURN
CM 1740 POKE53252,0:POKE53253,
       0:RETURN
```

SIGNAL COMPUTER CONSULTANTS *Presents...*



Computer Software for the Cognitive Game Player

Choose from the following programs for the Commodore 64 that simulate real-life jobs and challenge the users' problem solving skills.

TRAIN DISPATCHER - An introduction to Centralized Traffic Control (CTC) on railroads. Gain skill in routing rail traffic as you become the dispatcher in this simulation. - $15.

SUPER DISPATCHER - An advanced Centralized Traffic Control simulation inspried by our popular *Train Dispatcher.* For those who like a real challenge! - $25.

SUPER TRACK BUILDER - Design additional rail territories to augment those provided with *Super Dispatcher.* Not a stand-alone program. - $15.

LOCOMOTIVE SWITCHER - Railcar manipulation and switching problems in a small industrial yard. Try to minimize damage and maximize efficiency as you move individual cars of a train to their computer-determined destinations. - $20.

SONAR SEARCH - The flip-coin of the usual submarine war game. You become the sonar operators in the destroyers pursuing the submarines. Rely on high-resolution graphics and simulated sonar echoes to find, track, and destroy the enemy submarines. - $15.

NORTHEAST CORRIDOR - The ultimate in railroad traffic control simulations. Recently released for Commodore 64, *Northeast Corridor* addresses 325 track miles which lie between Washington, D.C. and Wilmington, Delaware. The volume of traffic, the variety of interlockings and track configurations, and the interesting mix of high speed passenger and lower speed freight trains on the territory combine to present a formidable control challenge for the user who plays the role of a sole dispatcher trying to keep passenger trains on time, prevent bottlenecks, and, in general, keep traffic flowing smoothly. - $40.

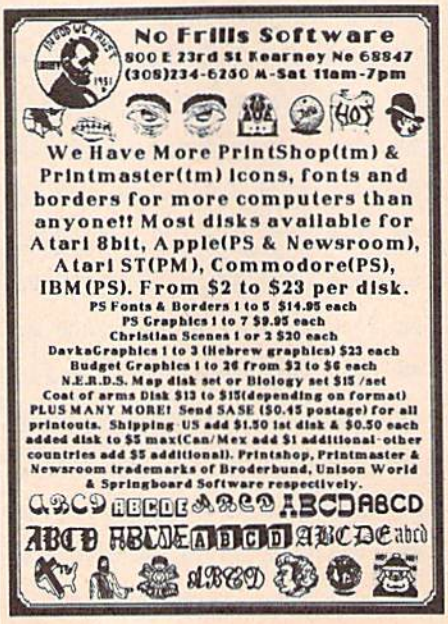
SIGNAL Computer Consultants
P.O. Box 18222, Dept. 11
Pittsburgh, PA 15236
(412) 655-7727

USA & Canada add $2.50 postage and handling ($4.00 foreign) for each product ordered. All checks or money orders must be in USA funds, all foreign payments must be against USA banks. PA residents add 6% sales tax. Visa/Mastercard also accepted. Show card number, expiration date, and signature. We guarantee and support our products.

ADVERTISERS INDEX

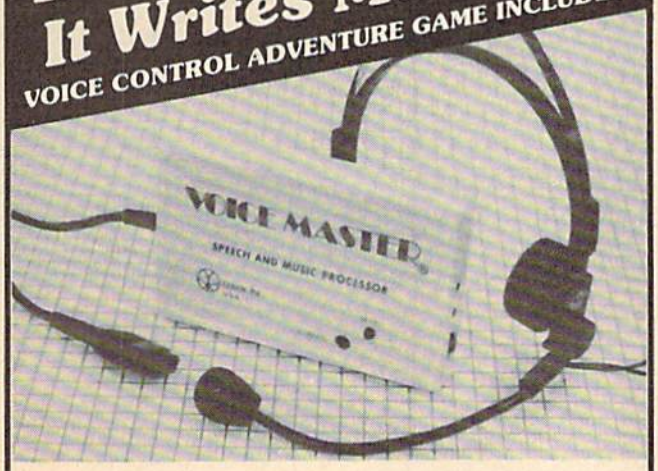
Reader Service Number/Advertiser	Page
102 Abacus	59
103 Accolade	2
104 ActionSoft	71
105 Activision	57
106 Aprotek	83
107 Berkeley Softworks	63
108 Brøderbund	BC
109 Budget Computers	102
110 CAPCOM	77
111 CompuServe	IFC
112 ComputAbility	105
113 Computer Direct	66–67
114 Computer Heroes	85
115 Computer Repeats, Inc.	107
116 COVOX Inc.	101
117 Creative Micro Design	35
Crown Custom Covers	114
118 Datel Computers	13–15
119 Electronic Arts	21
120 Electronic Arts	30–31
121 First Row Software Publishing	29
122 Interplay Productions	IBC
123 Joker Software	1
124 Konami Inc.	22–23
125 Lyco Computer	48–53
126 Mastertronic Intl.	37
127 Melbourne House	79
128 Mibro Co.	101
129 Microcube Corp.	85
130 Micro Prose	7
131 Micro Prose	45
132 Micro Prose	73
133 Montgomery Grant	84
134 No Frills Software	100
135 Origin Systems, Inc.	5
136 Origin Systems, Inc.	65
137 P.A.V.Y. Software	102
138 Precision Data Products	114
139 Q-Link	33
140 Renco Computer Printer Supply	114
Schnedler Systems	111
141 Signal Computer Consultants	100
142 Sir-Tech Software, Inc.	75
143 Soft Lore	102
144 Softech Computer Systems	111
145 Software Discounters of America	108–109
146 Software Support Intl.	61
147 Software Support Intl.	80–81
SOGWAP	114
148 Star Micronics	103
149 Strategic Simulations, Inc.	47
150 subLOGIC	43
151 subLOGIC	56
152 TAITO	8–9
Tektonics Plus	102
153 Telegames USA	100
154 Tenex Computer Express	113
155 Tussey Computer Products	25–27
156 Ultrabyte	114
157 Wright Computer	111

Classified Ads	115
COMPUTE!'s Best of 1988 Gazette Disk Subscription	44
COMPUTE!'s Demo Disk Pack	16–17
COMPUTE!'s Disk Subscription	69
COMPUTE!'s Gazette Back Issues	78
COMPUTE!'s Gazette 5-year Index on Disk	46


No Frills Software
800 E 23rd St Kearney Ne 68847
(308)234-6230 M-Sat 11am-7pm
We Have More PrintShop(tm) & Printmaster(tm) Icons, fonts and borders for more computers than anyone!! Most disks available for Atari 8bit, Apple(PS & Newsroom), Atari ST(PM), Commodore(PS), IBM(PS). From $2 to $23 per disk.
PS Fonts & Borders 1 to 5 $14.95 each
PS Graphics 1 to 7 $9.95 each
Christian Scenes 1 or 2 $20 each
DavkaGraphics 1 to 3 (Hebrew graphics) $23 each
Budget Graphics 1 to 26 from $2 to $6 each
N.E.R.D.S. Map disk set or Biology set $15 /set
Coat of arms Disk $13 to $15(depending on format)
PLUS MANY MORE! Send SASE ($0.45 postage) for all printouts. Shipping-US add $1.50 1st disk & $0.50 each added disk to $5 max(Can/Mex add $1 additional-other countries add $5 additional). Printshop, Printmaster & Newsroom trademarks of Broderbund, Unison World & Springboard Software respectively.

It Talks! It Recognizes! It Writes Music!

VOICE CONTROL ADVENTURE GAME INCLUDED



THE AMAZING VOICE MASTER®
Speech and Music Processor

Your computer can talk in your own voice.
Not a synthesizer but a true digitizer that **records** your natural voice quality—and in any language or accent. **SPEECH CONSTRUCTION SET** software package included for complete pitch and amplitude editing. The ultimate in a graphics based speech workstation.

And it will understand what you say. A real word recognizer for groups of 32 words. **Now you can have a two way conversation with your computer!**

Exciting Music Bonus lets you hum or whistle to write and perform. Notes literally scroll by **as you hum!** Your composition can be edited, saved, and printed out.

ESCAPE FROM PLANET X

A WILD VOICE CONTROL TEXT ADVENTURE GAME . . .
Escape certain death by scientific experiments! Confront exotic ocelots in alien jungles! Explore the ruins of an ancient alien city! Dig for treasure on far-off islands! Culture! Art! Disease! Asteroids! Violence! Violence in all its forms! Fun violence for kids—more serious violence for adults! Co-Exist with aliens in peace and harmony, or blast them to pieces! Kill aliens named Joe! Symbolic squids! Enjoy lounging around in a swivel chair! Die of explosive decompression! Have fun exploring Planet X! Then have fun blowing it up! *Escape from Planet X and win!*

Escape from Planet X is *included* with the purchase of Voice Master. Available separately for only $19.95 (plus $2 shipping costs). Game can be played with keyboard only.

ONLY $89.95 C-64 and 128 (in 128 mode) includes all hardware and software.

VISA

ORDER HOTLINE: (503) 342-1271
Monday—Friday, 8 AM to 5 PM Pacific Time

MasterCard

Add $4 for shipping and handling. Add an additional $2 for 2nd day delivery. All goods shipped UPS. Master Card and VISA, money order, cashiers check or personal checks accepted (allow a 3-week shipping delay when paying by personal check). Specify computer type when ordering. 30-DAY MONEY BACK GUARANTEE, ONE YEAR WARRANTY ON HARDWARE.

Call or write for FREE product catalog.

COVOX INC. (503) 342-1271
675-D Conger Street, Eugene, OR 97402
Telex 706017 (AV ALARM UD)

MIBRO
CO., INC.
OUR ONLY STORE
ESTABLISHED 1950
64 WEST 36th ST
NEW YORK CITY
NEW YORK 10018

COMPUTER DISCOUNTS ON ALL YOUR COMPUTER NEEDS

CALL TOLL FREE 1-800-451-9780
NEW YORK STATE RESIDENTS CALL (212) 695-7133
CUSTOMER SERVICE (212) 967-2353
MON.-SAT. 10:00AM-7:30PM • SUN. 10:30AM-6:00PM

Commodore

COMMODORE 64-C 20 PC. DELUXE OUTFIT
OUTFIT INCLUDES: Commodore 64-C Keyboard •1541 Disc Drive •12" Computer Monitor •Commodore Printer •AC Adapter •Owners Manual •Disc Drive Head Cleaner •10 Diskettes **$358**

Commodore

COMMODORE 64-C 20 PC. PROFESSIONAL OUTFIT
OUTFIT INCLUDES: Commodore 64-C Keyboard •1541 Disc Drive •Commodore 1802 Color Monitor •Commodore 803 Printer •AC Adapter •Owners Manual •Disc Drive Head Cleaner •10 Diskettes **$598**

Commodore

COMMODORE 128 20 PC. DREAM OUTFIT
OUTFIT INCLUDES: Commodore 128 Keyboard •1571 Disc Drive •12" Computer Monitor •Commodore Printer •AC Adapter •Owners Manual •Disc Drive Head Cleaner •10 Diskettes **$498**

Commodore

COMMODORE 128 - 20 PC. TOP OF THE LINE OUTFIT
OUTFIT INCLUDES: Commodore 128 Keyboard •Commodore 1571 Disc Drive •Commodore 1084 RGB Color Monitor •Commodore MPS-1200 Printer •AC Adapter •Owners Manual •Disc Drive Head Cleaner •10 Diskettes **$798**

COMMODORE AMIGA

AMIGA 500 TOP OF THE LINE OUTFIT
OUTFIT INCLUDES: Amiga 500 With Built-In Drive •Color Monitor •Printer For Amiga •Package Of 10 Diskettes •Disc Drive Head Cleaner •Owners Manual •USA Guarantee **$798**

AMIGA 501 • AMIGA 1010
AMIGA 1020 / IN STOCK

Commodore®

COMMODORE 128-D 20 PC. TOP OF THE LINE OUTFIT
OUTFIT INCLUDES: Commodore 128-D With Built-In 1571 Disc Drive •Commodore RGB Color Monitor •Commodore MPS-1000 Printer •AC Adapter •Owners Manual •Disc Drive Head Cleaner •10 Diskettes **$798**

Commodore®
HARDWARE / SOFTWARE

128 COMPUTER	1750 EXPANDER
64 COMPUTER	1351 MOUSE
64-C COMPUTER	1702 MONITOR
128D COMPUTER	1802 MONITOR
1541 DISC DRIVE	1902 MONITOR
1541-C DISC DRIVE	2002 MONITOR
1541-II DISC DRIVE	1080 MONITOR
1571 DISC DRIVE	1084 MONITOR
1581 DISC DRIVE	801 PRINTER
1660 MODEM	803 PRINTER
1670 MODEM	MPS-1000 PRINTER
1764 EXPANDER	MPS-1200 PRINTER
1700 EXPANDER	MPS-1250 PRINTER

ITEMS SOLD SEPARATELY.
CALL NOW FOR NEW LOW PRICES!!

COMMODORE AMIGA 2000

CALL FOR NEW LOW PRICE!
FEATURES INCLUDE: 1 MB Memory Expandable To 9 MB •Built-In Serial Centronics •RGB Video Ports •Built-In Mouse
ALSO AVAILABLE: AMIGA 1084 MONITOR •3.5" INTERNAL DRIVE •BRIDGE CARD HARD DRIVE CONTROLLER •2 MB RAM EXPANDER •PACKAGE DEALS AVAILABLE!

CHOOSE YOUR OWN PACKAGE DEAL
MIX & MATCH THE COMPUTER SYSTEM THAT'S GOOD FOR YOU & ONE OF OUR COMPUTER SPECIALISTS WILL GIVE YOU A SPECIAL PRICE.

ORDER NOW!! PHONE ORDERS ONLY-
CALL TOLL FREE 1-800-451-9780 NY RESIDENTS / INFO CALL (212) 695-7133
Use M/C, Visa, AMEX Or Send Money Order, Certified Checks. All Merchandise Brand New Factory Fresh. Shipping Charges Non-Refundable. For Mail Orders Please Call Before Sending In Money Order. All Prices Subject To Manufacturers Increase/Decrease. Refunds Within 7 Days Only With Original Packaging & Unfilled Guarantee Card. No Refunds Accepted Without Prior Verbal Authorization. Customer Service Between 12 pm-6 pm. Pictures Are For Illust. Purposes Only. Not Responsible For Typographical Errors. Consumer Affairs License No. 800-253. Prices Good For Mail Orders Only.

FACTORY AUTHORIZED

COMMODORE REPAIR CENTER

1-800-772-7289

(312) 879-2888 IL

C64 Repair (PCB ONLY)	42.95	Amiga Repair (PCB ONLY)	99.95
C128 Repair (PCB ONLY)	64.95	Amiga Drive Repair	149.95
1541 Permanent Alignment	29.95	Printers	CALL
1541 Repair	79.95	Monitors	CALL
1571 Repair	79.95	Other Equipment	CALL

CALL BEFORE SHIPPING
PARTS AND LABOR INCLUDED
FREE RETURN SHIPPING
(APO, FPO, AIR ADD $10.00)
24-48 HR. TURNAROUND
(Subject to Parts Availability)
30 DAY WARRANTY ON ALL REPAIRS

COMMODORE PARTS

C-64 Power Supply	34.95
128 Power Supply	59.95
C-64 Over Voltage Sensor	19.95
Other Parts	CALL

(Plus $3.00 Shipping/Handling)
All parts for Commodore equipment usually in stock
For Parts Call (312) 879-2350
Dealer Discounts Available

MasterCard VISA

TEKTONICS PLUS, INC.
150 HOUSTON STREET
BATAVIA, IL 60510
CLIP AND SAVE

Copies of articles from this publication are now available from the UMI Article Clearinghouse.

For more information about the Clearinghouse, please fill out and mail back the coupon below.

UMI Article Clearinghouse

Yes! I would like to know more about UMI Article Clearinghouse.
I am interested in electronic ordering through the following system(s):

☐ DIALOG/Dialorder ☐ ITT Dialcom
☐ OnTyme ☐ OCLC ILL Subsystem
☐ Other (please specify)_____
☐ I am interested in sending my order by mail.
☐ Please send me your current catalog and user instructions for the system(s) I checked above.

Name_____
Title_____
Institution/Company_____
Department_____
Address_____
City_____ State_____ Zip_____
Phone (___)_____

Mail to: University Microfilms International
300 North Zeeb Road, Box 91 Ann Arbor, MI 48106

WHAT COPYS WHAT ?

Stop losing $$$ software !

No single copy disk will handle even 60% of today's titles. Few can afford to purchase all 50+ copy/parameter disks available. Solution? Type in the name of the program you wish to back-up and "What Copys What" shows you which copy/param disks will do the job. Unlike booklets claiming to do the same - W.C.W. is up-to-date AND accurate!

SPECIAL OFFER ....
Normally $19.95 Order now for just $12 ! (Updates only $3)
Also - informative booklet - "Back-ups for Beginners" $9.00

Budget Computers
"Your Commodore Headquarters"
1619 New York Arlington,Tx 76010
(817) 792-3588

GET MORE PLEASURE FROM THE BIBLE WITH

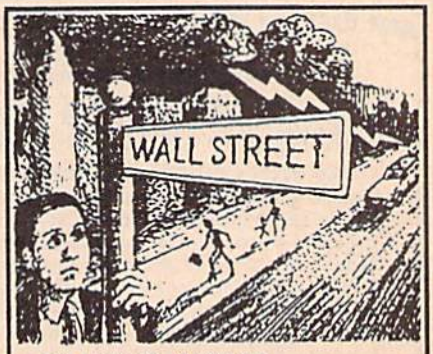
LANDMARK
The Computer Reference Bible

Here's what LANDMARK will enable you to do:

✔ SEARCH THROUGH THE BIBLE---Find Phrases, words or sentences.
✔ DEVELOP TOPICAL FILES---Copy from The Bible text and search results then add your own comments and notes.
✔ COMPILE YOUR PERSONAL BIBLE--- Outline texts in color. Add Notes and comments. Create your own supplementary Study files.
✔ CREATE FILES--- Then convert them for use with wordprocessors like Paperclip and GEOS.
✔ MAKE SUPPLEMENTARY STUDY FILES--- and develop translation variations.

SUGGESTED RETAIL $164.95
ASK ABOUT OUR FALL '88 SPECIAL!
v1.2 for C64 and v2.0 for C128
CALL OR WRITE TODAY FOR A FREE BROCHURE, WHICH SHOWS HOW VALUABLE LANDMARK CAN BE IN YOUR BIBLE STUDY
P.A.V.Y. Software P.O. Box 1584
Ballwin, MO 63022 (314) 527-4505

ASK FOR IT AT YOUR LOCAL SOFTWARE DEALER!



GO AHEAD...TRY ME!

I'll give you $250,000 and we'll see if you're good enough to gain entrance to the Financial Wizards Club.

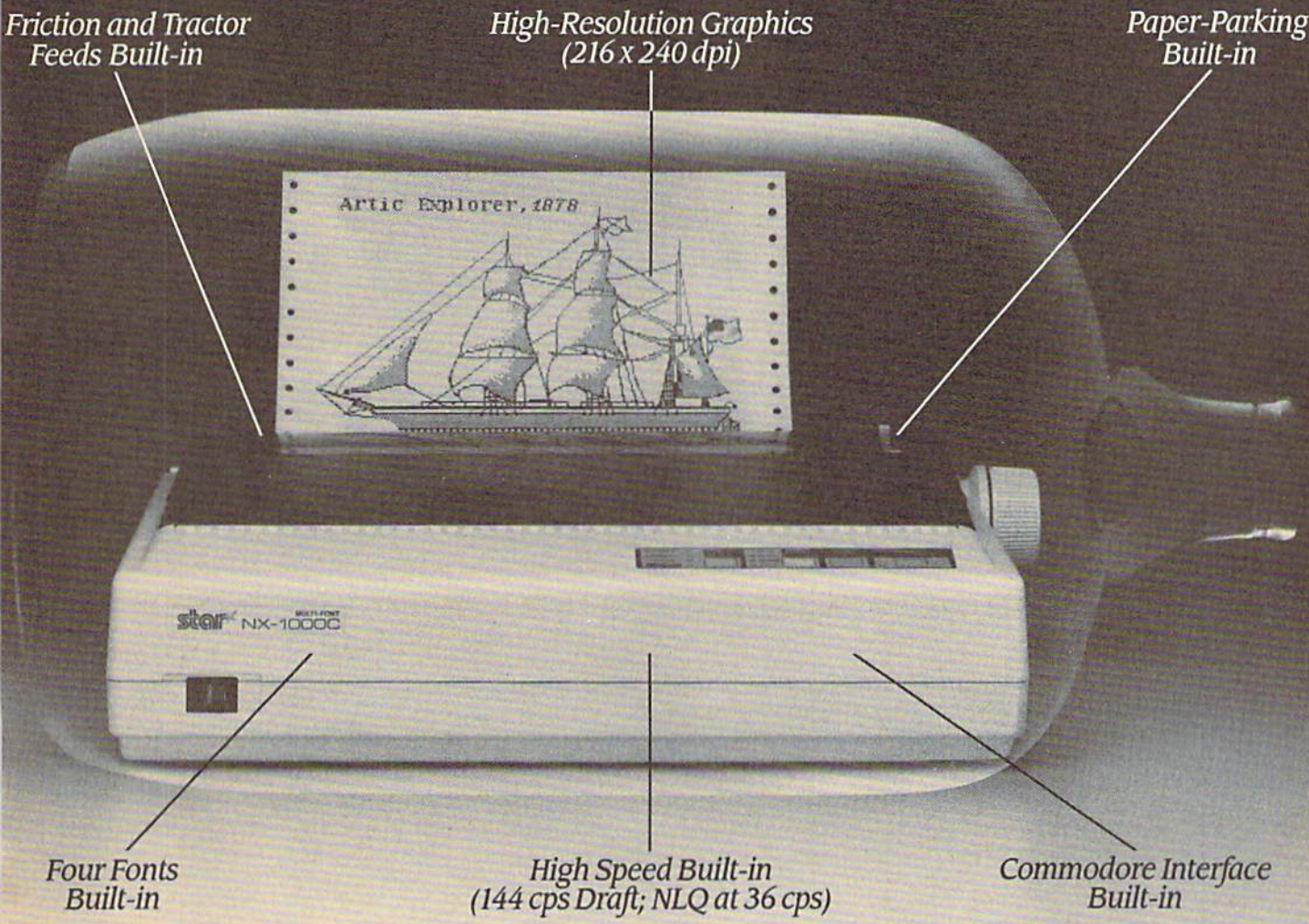
BLACK MONDAY★ is a stock market game that puts YOU on Wall Street. Choose from over 250 stocks, then buy & sell at your discretion. You can graph your stocks. Dividends are paid. Companies go bankrupt. Stocks will split, and MUCH MORE! But, let me warn you...the lightning won't necessarily strike on Oct. 19! SO GO AHEAD! TRY ME!

Send $29.95 (U.S.) Check or Money-Order (Sorry, No COD's) to:

SOFT LORE
P.O. Box 131, Dept. C-G
Maurertown, VA 22644

★ For C-64 & C-128; IBM Version Coming Soon

The new Star Multi-Font. How did Star get it all in there?


Friction and Tractor Feeds Built-in
High-Resolution Graphics (216 x 240 dpi)
Paper-Parking Built-in
Artic Explorer, 1878
star NX-1000C
Four Fonts Built-in
High Speed Built-in (144 cps Draft; NLQ at 36 cps)
Commodore Interface Built-in

It wasn't easy. But, we built an incredible number of features into the Star NX-1000C Multi-Font™. So now you and your Commodore can be as creative as you like.

The best feature in this new Star printer is built into its name—Multi-Font. It has four built-in type fonts that give you twenty different print style options. Just mix these fonts in with its high-resolution graphics to make great looking reports, greeting cards, posters—whatever you want.

And the list of built-in features goes on—there's impressive speed in both draft and near letter quality. And an automatic single sheet feed. Plus, a paper-parking mechanism that lets you use single sheets without removing tractor paper. And the Multi-Font's easy-to-use push button control panel gives you command of over thirty-five functions.

Whether it's for serious work or serious play, the Star NX-1000C Multi-Font has so much built-in, you'll get more out of your Commodore. To find out where you can see the Multi-Font, call 1-800-447-4700.

star micronics

The ImagePower™ Printers

Multi-Font printout produced by Flexidraw 5.5 graphics software by Inkwell Systems.

MLX Machine Language Entry Program For Commodore 64

Ottis Cowper

"MLX" is a labor-saving utility that allows almost fail-safe entry of Commodore 64 machine language programs.

Type in and save some copies of MLX—you'll want to use it to enter future ML programs from COMPUTE!'s GAZETTE. When you're ready to enter an ML program, load and run MLX. It asks you for a starting address and an ending address. These addresses appear in the article accompanying the MLX-format program listing you're typing.

If you're unfamiliar with machine language, the addresses (and all other values you enter in MLX) may appear strange. Instead of the usual decimal numbers you're accustomed to, these numbers are in *hexadecimal*—a base 16 numbering system commonly used by ML programmers. Hexadecimal—hex for short—includes the numerals 0–9 and the letters A–F. But don't worry—even if you know nothing about ML or hex, you should have no trouble using MLX.

After you enter the starting and ending addresses, you'll be offered the option of clearing the workspace. Choose this option if you're starting to enter a new listing. If you're continuing a listing that's partially typed from a previous session, don't choose this option.

A functions menu will appear. The first option in the menu is ENTER DATA. If you're just starting to type in a program, pick this. Press the E key, and type the first number in the first line of the program listing. If you've already typed in part of a program, type the line number where you left off typing at the end of the previous session (be sure to load the partially completed program before you resume entry). In any case, make sure the address you enter corresponds to the address of a line in the listing you are entering. Otherwise, you'll be unable to enter the data correctly. If you pressed E by mistake, you can return to the command menu by pressing RETURN alone when asked for the address. (You can get back to the menu from most options by pressing RETURN with no other input.)

Entering A Listing

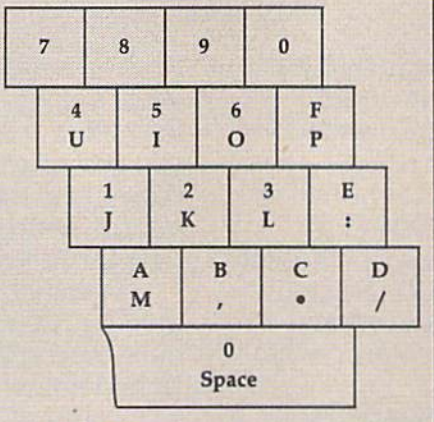
Once you're in Enter mode, MLX prints the address for each program line for you. You then type in all nine numbers on that line, beginning with the first two-digit number after the colon (:). Each line represents eight data bytes and a checksum. Although an MLX-format listing appears similar to the "hex dump" listings from a machine language monitor program, the extra checksum number on the end allows MLX to check your typing.

When you enter a line, MLX recalculates the checksum from the eight bytes and the address and compares this value to the number from the ninth column. If the values match, you'll hear a bell tone, the data will be added to the workspace area, and the prompt for the next line of data will appear. But if MLX detects a typing error, you'll hear a low buzz and see an error message. The line will then be redisplayed for editing.

Invalid Characters Banned

Only a few keys are active while you're entering data, so you may have to unlearn some habits. You *do not* type spaces between the columns; MLX automatically inserts these for you. You *do not* press RETURN after typing the last number in a line; MLX automatically enters and checks the line after you type the last digit.

Only the numerals 0–9 and the letters A–F can be typed in. If you press any other key (with some exceptions noted below), you'll hear a warning buzz. To simplify typing, the numeric keypad modification from the March 1986 "Bug-Swatter" column is now incorporated in the listing. The keypad is active only while entering data. Addresses must be entered with the normal letter and number keys. The figure below shows the keypad configuration:



MLX checks for transposed characters. If you're supposed to type in A0 and instead enter 0A, MLX will catch your mistake. There is one error that can slip past MLX: Because of the checksum formula used, MLX won't notice if you accidentally type FF in place of 00, and vice versa. And there's a very slim chance that you could garble a line and still end up with a combination of characters that adds up to the proper checksum. However, these mistakes should not occur if you take reasonable care while entering data.

Editing Features

To correct typing mistakes before finishing a line, use the INST/DEL key to delete the character to the left of the cursor. (The cursor-left key also deletes.) If you mess up a line really badly, press CLR/HOME to start the line over. The RETURN key is also active, but only before any data is typed on a line. Pressing RETURN at this point returns you to the command menu. After you type a character of data, MLX disables RETURN until the cursor returns to the start of a line. Remember, you can press CLR/HOME to quickly get to a line number prompt.

More editing features are available when correcting lines in which MLX has detected an error. To make corrections in a line that MLX has redisplayed for editing, compare the line on the screen with the one printed in the listing, then move the cursor to the mistake and type the correct key. The cursor left and right keys provide the normal cursor controls. (The INST/DEL key now works as an alternative cursor-left key.) You cannot move left beyond the first character in the line. If you try to move beyond the rightmost character, you'll reenter the line. During editing, RETURN is active; pressing it tells MLX to recheck the line. You can press the CLR/HOME key to clear the entire line if you want to start from scratch, or if you want to get to a line number prompt to use RETURN to get back to the menu.

Display Data

The second menu choice, DISPLAY DATA, examines memory and shows the contents in the same format as the program listing (including the checksum). When you press D, MLX asks you for a starting address. Be sure that the starting address you give corresponds to a line number in the listing. Otherwise, the checksum display will be meaningless. MLX displays program lines until it reaches the end of the program, at which point the menu is redis-

Order Toll Free **800-558-0003**

Since 1982
ComputAbility
Consumer Electronics

Order Toll Free **800-558-0003**

GAZ-12-88

COMMODORE AMIGA™ 500

COMMODORE AMIGA™ 2000

Call For The Lowest Prices On All Amiga Configurations

Drive Special
FSD-2 159
1541 Compat. Delivered Price*

Printers
Panasonic
1080i-II ..... CALL
1091i-II 185
STAR
NX-1000 175
NX-1000 Rainbow 239

Modems
Avatex 1200 E 69
Avatex 1200 HC 95
Avatex 2400 155

RS-232 Interfaces
Peak (to 1200 Baud) 19.95
Omnitronix Deluxe 44.95

COMMODORE Super Sale
*Free delivery in the continental USA

128-D $459*
64-C $149*
1084-S $319*
64-C & 1541C-II $324.95*
1571 $249*
1802 $319*
PC-Colt $719*
1581 D.Drive $195*
1750 or 1764 Ram Exp Call

ABACUS 64
Basic Compiler 25.95
Becker Basic 32.95
CAD-Pack 25.95
Chartpack 25.95
Forth 25.95
Geos Inside and Out 16.95
Personal Portfolio 25.95
Powerplan 25.95
Super C. Compiler 39.95
Super Pascal 39.95
Xper System 39.95

ACCESS
Echelon 29.95
Firestorm 10.95
HEAVY METAL 25.95
Leaderboard Tri-Pack 10.95
Mach V-Cart 21.95
Tripple Pack 14.95
World Class Leaderbd. 25.95

ACCOLADE
Accolade Comics 18.95
Ace of Aces 10.95
Apollo 18 ..... 18.95
Bubble Ghost 18.95
Card Sharks 18.95
Fast Break 18.95
Hardball 10.95
Jet Boys 10.95
Kill Until Dead 10.95
Mini Putt 18.95
Plasmatron 10.95
Power At Sea 18.95
Rack'em 18.95
Serve and Volley 18.95
Steel Thunder 18.95
Team Const. 4th Inches 10.95
Test Drive 18.95
TKO 18.95
Train, The 18.95

ACTIVISION
2 on 2 basketball 10.95
Black Lamp 14.95
Champ Baseball '88 ..... 10.95
Crombow 22.95
Enlightenment 14.95
Last Ninja 22.95
Main Event 19.95
Might and Magic 25.95
Necromancer 25.95
Ocean Ranger 22.95
Penmen feaver 22.95
Portal 25.95
Predator 19.95
Rampage 22.95
Star Rank Boxing 2 ..... 19.95
Transformers 10.95

BERKLEY
Deskpack 1 ..... 21.95
Deskpack Plus 19.95
Font Pack Plus 19.95
Geo Programmer 42.95
Geo Publish 31.95
Geo Spell 18.95
Geo Tripple Pack 31.95
Geo Write 31.95
Geocalc 31.95
Geodex 24.95
Geofile 31.95
Geos 64 V2.0 ..... 42.95
Pont Pack 1 ..... 18.95

BRODERBUND
Arcade Construction Kit 19.95
AutoDuel 31.95
Carmen SanDgo Wld/Ear 22.95
Castdron 10.95
Karateka 10.95
Magnetron 10.95
Moebius 25.95
Ogre 19.95
P.S. Companion 22.95
Print Shop 28.95
PS. Graphics Lib 1-2or3 ..... 16.95
Super Bike challenge 14.95
Thinking CAP 22.95
Toy Shop 19.95
Ultima 1 or 3 ..... 25.95
Ultima 4 ..... 38.95
Ultima 5 ..... 38.95

CAPCOM
1942 ..... 19.95
Bionic Commando 19.95
Black Tiger 19.95
gunsmoke 19.95
Hat Trick 19.95
Mini Golf 19.95
SideArm 19.95
Speed Rumbler 19.95
Stocker 19.95
Street Fighter 19.95
Trojan 19.95

CINEMAWARE
Defender of the Crown 22.95
Lords of the Rising Sun 22.95
Rocket Ranger 22.95
SDI 22.95
Sinbad 22.95
Three Stooges 22.95
TV Sports Football 22.95

COSMI
Chernobel 16.95
Grand Slame BB 16.95
Navcom 6 ..... 17.95
President is Missing 16.95
Shirley Muldoney 16.95

DATA EAST
Breakthrough 19.95
Commando 14.95
Ikari Warrior 19.95
Karate Champ 16.95
Karnov 19.95
Kid Nikki 19.95
Kung Fu Master 16.95
Last Mission 9.95
Platoon 19.95
Speed Buggy 19.95
Tag Team Wrestling 14.95
TNK 3 ..... 9.95

ELECTRONIC ARTS
Adv. Construction 10.95
Alien Fires 20.95
Alternate Reality 20.95
Amer. Civil War Vol 2 ..... 26.95
Amnesia 26.95
Android Decision 17.95
Annals of Rome 17.95
Bard's Tale 25.95
Bard's Tale III 26.95
Battle Disk/Pegasus 11.95
Battle Droidz 17.95
Battlefront 25.95
Bismarck 21.95
Carriers At War 31.95
Caveman Ughdympics 25.95
Chessmaster 2000 ..... 25.95
Chickamauge 23.95
Cosmic Relief 16.95
Dark Lord 14.95
Death Lord 20.95
Demon Stalkers 20.95
Double Dragon 24.95
Dragon's Lair 19.95
Dungeon, The 26.95
EOS 11.95
Europe A Blaze 31.95
Force 7 ..... 14.95
Global Commander 20.95
Halls of Montezuma 26.95
Heart of Africa 10.95
Hunt for Red October 26.95
Instant Music 24.95
Jordan VS. Bird 20.95
Lords of Conquest 10.95
Mars Saga 24.95
Master Ninja 20.95
Mavis Beacon Typing 20.95
Mind Mirror 10.95
Modem Wars 24.95
Monopoly 20.95
Music Construction 10.95
Napolean in Russia 17.95
One on One 10.95
Paper Clip III 33.95
Paper Clip Publisher 33.95
Patton vs Rommel 11.95
Pegasus 23.95
Pinball Construction 10.95
Racing Destruction 10.95
Reach for the Stars 26.95
Road to Moscow 25.95
Roadwars 20.95
Robot Rascals 25.95
Rockford 21.95
Rommel Vs. Africa 26.95
Rubicon Alliance 14.95
Russia 25.95
Scrabble 22.95
Scruples 26.95
Seven Cities of Gold 10.95
Skate or Die 21.95
Skyfox 2 ..... 21.95
Strike Fleet 21.95
Super Boulderdash 10.95
Tobruk 23.95
Tomahawk 21.95
Touchdown Football 10.95
Twilights Ransom 24.95
Ultimate Wizard 10.95
Video Title Shop 20.95
Wasteland 26.95
World Tour Golf 11.95
Yeager AFS 24.95

EPYX
4X4 Off Road Racing 22.95
Apshai Trilogy 12.95
Battleship 17.95
Boulderdash Const Set 12.95
California Games 22.95
Champ Wrestling 12.95
Death Sword 12.95
Destroyer 22.95
Dive Bomber 22.95
Fast Load 22.95
Final Assult 22.95
Games summer Ed. 22.95
Games Winter Ed. 22.95
Home Video Prodcr 30.95
Impossible Mission 2 ..... 22.95
L.A. Crackdown 22.95
Legend of Black Silver 22.95
Metro Cross 13.95
Mind roll 22.95
Neverness 22.95
Omnicron Conspiracy 22.95
RAD Warrior 12.95
Skate Ball 22.95
Sports - A - Roni 13.95
Spy Vs. Spy 3 ..... 12.95
St. Sports Baseball 22.95
St. Sports Basketball 22.95
St. Sports Football 22.95
St. Sports Soccer 22.95
Sticker Maker 19.95
Street Cat 13.95
Sub Battle Simulator 22.95
Summer Games 1 or 2 ..... 12.95
Super Cycle 12.95
Technocop 22.95
Tower Toppler 22.95
Trials of Honor 22.95
World Games 12.95

KONAMI
Boot Camp 19.95
Contra 19.95
Iron Horse 19.95
Jackal 19.95
Jail Break 19.95
Rush-n-Attack 19.95
Super Basketball 19.95

MICRO ILLUSION
Black Jack Academy 25.95
Fairy Tale Adventure 32.95
Firepower 16.95
Galactic Invasions 16.95
Land of Legends 32.95
Mainframe 64 ..... 22.95
Planetarium 44.95
Romantic encounter 25.95
Sky Travel 32.95
Turbo 16.95

MICROPROSE
Airborne Ranger 22.95
Conflict In Vietnam 25.95
Crusade In Europe 25.95
Decision in the Desert 25.95
F-15 Strike Eagle 22.95
Gunship 22.95
Kennedy Approach 16.95
Pirates 25.95
Red Storm Rising 25.95
Silent Service 22.95
Stealth Fighter F-19 ..... 25.95
Top Gunner 16.95

MINDSCAPE
720 ..... 22.95
Allen Syndrom 29.95
Bad Street Brawler 19.95
Blockbuster 64 ..... 19.95
Bop 'n' Wrestle 19.95
CAPTAIN BLOOD 22.95
Clubhouse Sports 19.5
Color Me ..... Call
Deeper Dungeons (4gmlt) 17.95
Eagles Nest/Infiltrator 25.95
Gauntlet 22.95
Harrier Combat Sim. 19.95
Head Over Heals 10.95
Indoor Sports 1 or 2 ..... 19.95
Infiltrator 2 ..... 22.95
Living Daylights 12.95
MISL Soccer 22.95
Outrun 22.95
Paperboy 22.95
Road Runner 22.95
Space Harrier 19.95
Super Star Ice Hockey 22.95
Superstar Soccer 22.95
Temple of Doom 22.95
Trail Blazer 19.95
Uninvited 22.95
Wizball 16.95
Xevious 19.95

MISCELLANEOUS 64
$100,000 Pyramid 10.95
Animation Station 59.95
Art Gallery 1 or 2 ..... 16.95
Barbarian 19.95
Bumper Sticker Maker 31.95
Business Card Maker 25.95
Business Form Shop 25.95
Button and Badge Maker 31.95
California Rasins 17.95
Copy II 64 ..... 27.95
Create BaseballTeam 17.95
Cyber Complex 18.95
Cycle Night 16.95
Daily Double Racing 17.95
Dark Castle 21.95
Dark Tower 19.95
Final Cartridge 3 ..... 49.95
Flexidraw ..... Call
Flight Simulator 2 ..... 32.95
Fontmaster 2 ..... 30.95
Frost Byte 18.95
HI Seas 32.95
Hobbit 23.95
Holywood Poker 18.95
Jet 27.95
John Elways Q.B. 19.95
Leather Goddesses 10.95
Love Quest 32.95
Microleague Baseball 25.95
Murder on the Atlantic 21.95
NBA 25.95
Night on the Town 19.95
Oxford Basic Tool Kit 19.95
Pocket Dictionary 10.95
Prime Time 19.95
Printmaster 21.95
Pro Football Facts 10.95
Pure Stat Baseball 25.95
Pure Stat Basketball 25.95
Pure Stat Football 35.95
Space Math 10.95
Star empire 17.95
Starfleet 1 ..... 26.95
StarTrek3/RebelUniv 19.95
Stealth Mission(Sublogic) 33.95
Super PacMan 10.95
Super Pak 2 ..... 89.95
Superbase 64 ..... 46.95
Superscript 64 ..... 32.95
Tetris 17.95
Thunder Chopper 19.95
Ticket To Hollywood 19.95
Trilogy 10.95
TV High Rollers 10.95
Twilight Zone 25.95
Typing Tutor 4 ..... 25.95
Up Periscope 19.95
Vampire's Empire 18.95
Video Wizard 19.95
Wall Street Raider 21.95
Warlock 19.95
Warp Speed 32.95
Western Games 18.95
Winter Challenge 10.95
Wizardry/Knight Diam. 25.95
WWF Wrestling 19.95
X-15 ..... 19.95
Zig Zag 17.95

RAINBIRD
Black Lamp 14.95
Elite 10.95
Guild of Thieves 25.95
Starglider II 14.95

SCORPION
Allen Destruction Set 19.95
Mandroid 19.95
Masterpiece 19.95
Supertanks 19.95
Terror 19.95

SPRINGBOARD
Cert Maker Lib 1 ..... 10.95
Certificate Maker 14.95
Clip art 1, 2, or 3 ..... 10.95
Graphic Expander 21.95
Newsroom 14.95

SSI
B-24 ..... 23.95
Battles of Napolean 33.95
Eternal Dagger 26.95
HERO'S of The LANCE 20.95
Panzer Strike 29.95
Phantasie 1-2-or 3 ..... 26.95
POOL OF RADIENCE 26.95
Questron II 26.95
Rings of Zilfin 26.95
Roadwar 2000 ..... 26.95
Roadwar Europa 26.95
Shard of Spring 26.95
Shiloh 26.95
Sons of Liberty 23.95
War in S. Pacific 38.95
Wargame Const Set 20.95
Wizard's Crown 26.95

TAITO
Alcon 19.95
Arkadolds 19.95
Bubble Bobble 22.95
Gladiator 19.95
Operation Wolf 25.95
Qix 19.95
Rastan 22.95
Renegade 22.95
Sky Shark 19.95

TIMEWORKS
Business Systems 34.95
Data Manager 1 ..... 15.95
Desk Top Publisher 39.95
Evelyn Wood 15.95
Geos Writer 25.95
Partner 64 ..... 25.95
Sideways 15.95
Swiftax '88 ..... 32.95
Swiftcalc/Sideways 15.95
Sylvia Porter 25.95
Wordwriter 3 ..... 25.95

C-128
Basic Compiler 128 ..... 39.95
CAD Pack 128 ..... 39.95
Chart pack 128 ..... 25.95
Cobol 128 ..... 39.95
Data manager 128 ..... 32.95
Desk Pack + ... 19.95
Fleet System 4 ..... 46.95
Fontmaster 128 ..... 36.95
Fontpack + ... 19.95
GeoCalc 128 ..... 42.95
GeoFile 128 ..... 42.95
Geos 128 ..... 42.95
GeoWrite 128 ..... 42.95
Partner 128 ..... 32.95
Pocket Filer 2 ..... 36.95
Speed Term 128 ..... 25.95
Superbase 128 ..... 87.95
Super C Compiler 39.95
Superscript 128 ..... 46.95
Super Pascal 128 ..... 39.95
Super Pack 2 ..... 59.95
Super Pack 128 ..... 46.95
Swiftcalc 128 ..... 32.95
Sylvia Porter 128 ..... 42.95
Wordwriter 128 ..... 32.95

ComputAbility
Consumer Electronics

P.O. Box 17882, Milwaukee, WI 53217

Order Toll Free
800-558-0003
For WI Orders and Technical Info
414-357-8181
FAX-(414)-357-7814
MasterCard VISA
Open M-F 9am-9pm Sat 11am-5pm Central
No Surcharge For MasterCard and Visa

ORDERING INFORMATION: Specify system. For fast delivery send cashier's check or money order. Personal and company checks allow 14 business days to clear. School P.O.'s welcome. C.O.D. charges are $3.00. In Continental U.S.A. include $3.00 for software orders 5% shipping for hardware, minimum $5.00. MasterCard and Visa orders please include card #, expiration date and signature. WI residents please include 5% sales tax. HI, AK, FPO, APO,Puerto Rico and Canadian orders, please add 6% shipping, minimum $6.00. All other foreign orders add 15% shipping, minimum $15.00. All orders shipped outside the Continental U.S.A. are shipped first class Insured U.S. mail. If foreign shipping charges exceed the minimum amount, you will be charged the additional amount All goods are new and include factory warranty. We do not guarantee compatability & version #s. Due to our low prices all sales are final. All Defective returns must have a return authorization number. Please call (414) 357-8181 to obtain an R.A. # or your return will not be accepted. Prices and availability subject to change without notice. 3.5" Disk titles may cost more than the same title on 5.25" disk. Shipping and handling are non-refundable. We ship the latest versions available to us, updates must be handled by and user directly with the manufacturer. HAVE A NICE DAY.

played. You can pause the display by pressing the space bar. (MLX finishes printing the current line before halting.) Press space again to restart the display. To break out of the display and get back to the menu before the ending address is reached, press RETURN.

Other Menu Options

Two more menu selections let you save programs and load them back into the computer. These are SAVE FILE and LOAD FILE; their operation is quite straightforward. When you press S or L, MLX asks you for the filename. You'll then be asked to press either D or T to select disk or tape.

You'll notice the disk drive starting and stopping several times during a load or save. Don't panic; this is normal behavior. MLX opens and reads from or writes to the file instead of using the usual LOAD and SAVE commands. Disk users should also note that the drive prefix 0: is automatically added to the filename (line 750), so this should *not* be included when entering the name. This also precludes the use of @ for Save-with-Replace, so remember to give each version you save a different name.

Remember that MLX saves the entire workspace area from the starting address to the ending address, so the save or load may take longer than you might expect if you've entered only a small amount of data from a long listing. When saving a partially completed listing, make sure to note the address where you stopped typing so you'll know where to resume entry when you reload.

MLX reports the standard disk or tape error messages if any problems are detected during the save or load. (Tape users should bear in mind that Commodore computers are never able to detect errors during a save to tape.) MLX also has three special load error messages: INCORRECT STARTING ADDRESS, which means the file you're trying to load does not have the starting address you specified when you ran MLX; LOAD ENDED AT *address*, which means the file you're trying to load ends before the ending address you specified when you started MLX; and TRUNCATED AT ENDING ADDRESS, which means the file you're trying to load extends beyond the ending address you specified when you started MLX. If you see one of these messages and feel certain that you've loaded the right file, exit and rerun MLX, being careful to enter the correct starting and ending addresses.

The QUIT menu option has the obvious effect—it stops MLX and enters BASIC. The RUN/STOP key is disabled, so the Q option lets you exit the program without turning off the computer. (Of course, RUN/STOP-RESTORE also gets you out.) You'll be asked for verification; press Y to exit to BASIC, or any other key to return to the menu. After quitting, you can type RUN again and reenter MLX without losing your data, as long as you don't use the clear workspace option.

The Finished Product

When you've finished typing all the data for an ML program and saved your work, you're ready to see the results. The instructions for loading and using the finished product vary from program to program. Some ML programs are designed to be loaded and run like BASIC programs, so all you need to type is LOAD *"filename"*,8 for disk or LOAD *"filename"* for tape, and then RUN. Such programs will usually have a starting address of 0801 for the 64. Other programs must be reloaded to specific addresses with a command such as LOAD *"filename"*,8,1 for disk or LOAD *"filename"*,1,1 for tape, and then started with a SYS to a particular memory address. On the Commodore 64, the most common starting address for such programs is 49152, which corresponds to MLX address C000. In either case, you should always refer to the article which accompanies the ML listing for information on loading and running the program.

An Ounce Of Prevention

By the time you finish typing in the data for a long ML program, you may have several hours invested in the project. Don't take chances—use our "Automatic Proofreader" to type the new MLX, and then test your copy *thoroughly* before first using it to enter any significant amount of data. Make sure all the menu options work as they should. Enter fragments of the program starting at several different addresses, and then use the Display option to verify that the data has been entered correctly. And be sure to test the Save and Load options several times to insure that you can recall your work from disk or tape. Don't let a simple typing error in the new MLX cost you several nights of hard work.

MLX For Commodore 64

```
SS 10 REM VERSION 1.1: LINES 8
      30,950 MODIFIED, LINES 4
      85-487 ADDED
EK 100 POKE 56,50:CLR:DIM IN$,
      I,J,A,B,A$,B$,A(7),N$
DM 110 C4=48:C6=16:C7=7:Z2=2:Z
      4=254:Z5=255:Z6=256:Z7=
      127
CJ 120 FA=PEEK(45)+Z6*PEEK(46)
      :BS=PEEK(55)+Z6*PEEK(56
      ):H$="0123456789ABCDEF"
SB 130 R$=CHR$(13):L$="{LEFT}"
      :S$=" ":D$=CHR$(20):Z$=
      CHR$(0):T$="{13 RIGHT}"
CQ 140 SD=54272:FOR I=SD TO SD
      +23:POKE I,0:NEXT:POKE
      {SPACE}SD+24,15:POKE 78
      8,52
FC 150 PRINT"{CLR}"CHR$(142)CH
      R$(8):POKE 53280,15:POK
      E 53281,15
EJ 160 PRINT T$" {RED}{RVS}
      {2 SPACES}[8 @]
      {2 SPACES}"SPC(28)"
      {2 SPACES}{OFF}{BLU} ML
      X II {RED}{RVS}
      {2 SPACES}"SPC(28)"
      {12 SPACES}{BLU}"
FR 170 PRINT"{3 DOWN}
      {3 SPACES}COMPUTE!'S MA
      CHINE LANGUAGE EDITOR
      {3 DOWN}"
JB 180 PRINT"{BLK}STARTING ADD
      RESS[4]";:GOSUB300:SA=A
      D:GOSUB1040:IF F THEN18
      0
GF 190 PRINT"{BLK}{2 SPACES}EN
      DING ADDRESS[4]";:GOSUB
      300:EA=AD:GOSUB1030:IF
      {SPACE}F THEN190
KR 200 INPUT"{3 DOWN}{BLK}CLEA
      R WORKSPACE [Y/N][4]";A
      $:IF LEFT$(A$,1)<>"Y"TH
      EN220
PG 210 PRINT"{2 DOWN}{BLU}WORK
      ING...";:FORI=BS TO BS+
      EA-SA+7:POKE I,0:NEXT:P
      RINT"DONE"
DR 220 PRINTTAB(10)"{2 DOWN}
      {BLK}{RVS} MLX COMMAND
      {SPACE}MENU {DOWN}[4]":
      PRINT T$"{RVS}E{OFF}NTE
      R DATA"
BD 230 PRINT T$"{RVS}D{OFF}ISP
      LAY DATA":PRINT T$"
      {RVS}L{OFF}OAD FILE"
JS 240 PRINT T$"{RVS}S{OFF}AVE
       FILE":PRINT T$"{RVS}Q
      {OFF}UIT{2 DOWN}{BLK}"
JH 250 GET A$:IF A$=N$ THEN250
HK 260 A=0:FOR I=1 TO 5:IF A$=
      MID$("EDLSQ",I,1)THEN A
      =I:I=5
FD 270 NEXT:ON A GOTO420,610,6
      90,700,280:GOSUB1060:GO
      TO250
EJ 280 PRINT"{RVS} QUIT ":INPU
      T"{DOWN}[4]ARE YOU SURE
       [Y/N]";A$:IF LEFT$(A$,
      1)<>"Y"THEN220
EM 290 POKE SD+24,0:END
JX 300 IN$=N$:AD=0:INPUTIN$:IF
      LEN(IN$)<>4THENRETURN
KF 310 B$=IN$:GOSUB320:AD=A:B$
      =MID$(IN$,3):GOSUB320:A
      D=AD*256+A:RETURN
PP 320 A=0:FOR J=1 TO 2:A$=MID
      $(B$,J,1):B=ASC(A$)-C4+
      (A$>"@")*C7:A=A*C6+B
JA 330 IF B<0 OR B>15 THEN AD=
      0:A=-1:J=2
GX 340 NEXT:RETURN
CH 350 B=INT(A/C6):PRINT MID$(
      H$,B+1,1);:B=A-B*C6:PRI
      NT MID$(H$,B+1,1);:RETU
      RN
RR 360 A=INT(AD/Z6):GOSUB350:A
      =AD-A*Z6:GOSUB350:PRINT
      ":";
BE 370 CK=INT(AD/Z6):CK=AD-Z4*
      CK+Z5*(CK>Z7):GOTO390
PX 380 CK=CK*Z2+Z5*(CK>Z7)+A
```

BUY•SELL•TRADE BUY•SELL•TRADE

Computer Repeats, Inc.

TRADE IN YOUR SYSTEM TOWARD ANYTHING WE SELL!

AMAZING PRICES EVERYDAY! ALL ORDERS PROCESSED IN 24 HRS!

FREE SOFTWARE! Amiga 500

$299 NEW

with trade-in of C128, 1571, 1802 OR 64C, 1541-II, 1802, 801
$CALL for your system

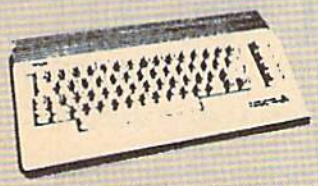
Amiga 2000

20% more for your system

$249 NEW

with trade-in of Amiga 1000 or Amiga 500
$CALL for your system

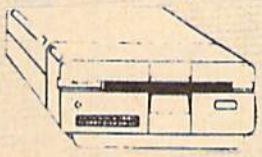
Commodore 64C



$89 NEW

with trade-in of 1541 OR $99 with C64
$CALL for your system

Commodore 1581 Drive



$79 NEW

with trade-in of 1571
$CALL for your system

Used

Amiga 500 CPU	$439	C128 CPU	$199
C64 CPU	$109	C64C CPU w/sftwr	$127
VIC-20CPU	$35	128D CPU	$359
A1020T 5 1/4 w/ sftwr	$159	1571 Drive	$189
1541 Drive	$125	SFD-1001	$99
Enhancer 2000 Drive	$119	1530 Datasette	$20
C1084 Monitor	$239	C1802C Monitor	$149
C1702 Monitor	$135	Monitors from	$39
IEEE intfc from	$49	Xetec Graphics Gold	$95
Okimate 10 w/PIP	$99	MPS-801 Printer	$79
MPS-803 Printer	$99	IBM 5152 100cps grx	$120
Epson Homewritter10	$151	Diablo 630 Dsywl	$249
C1660 Modem	$24	2400 baud Modem	$129
Smartlink 1200	$83	HesModem I 300 bd.	$20
Volks 6480 Mdm.	$40	Software/Books from	$1

New

COMMODORE 64/128

64C CPU w/GEOS	$159	1351 Mouse	$39
1764 256K RAM C64	$119	128D w/1571	$449
1700 128K RAM C128	$109	128 Computer	$279
C1084 RGB Monitor	$299	C1802C Monitor	$189
BMC Monitor stand	$20	1581 3 1/2 Drive	$179
1571 Drive	$225	1541-II Drive	$179
Excelerator+ Drive	$159	Micro R/D 2K Intfc	$49
Micro R/D 10K Intfc	$59	Xetec JR Intfc	$39
Xetec SR Intfc	$59	Xetec GOLD Intfc	$119

AMIGA/PC

PC10-III CPU	$679	Amiga 500 CPU	$579
A501 512K RAM	$149	1010 ext Drive	$199
Master 3A Drive	$185	Amiga 2000 CPU	$1549
2MB RAM w/Chips	$429	Bridge Card w/Drive	$529
20MB Drive w/cntr	$579	A2090A Controller	$325

MODEMS

C1670 1200	$75	ParrotMini 1200/Am	$109
Avatex 1200e HC	$79	Supra 2400	$159
Avatex 2400HC	$199	SmartLink 2400HC	$179

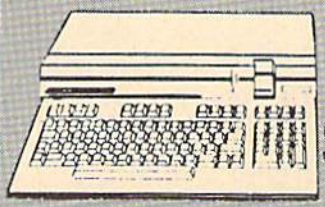
PRINTERS

Star NX-1000 144 cps	$189	Star NX-1000 Color	$249
Star NX-2400 24 Pin	$389	Okidata 183 135 col	$315
Okimate 20 w/PIP	$189	Laser Printers	$Call

OTHER ITEMS

Epxy 500 XJ Joystick	$19	SpectraVideo Jystk	$6
C64 power supply	$29	C128 power supply	$75

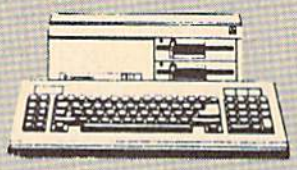
Commodore 128D



$249 NEW

with trade-in of C128, 1571 OR 64C, VIC-1525, 1541-II
$CALL for your system

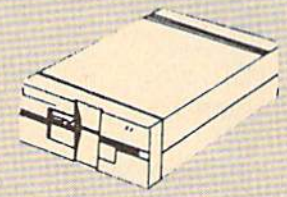
Commodore PC COLT



$499 NEW

with trade-in of C128, 1571 OR $579 with C64, 1541
$CALL for your system

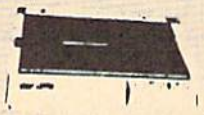
Commodore 1541-II



$114 NEW

with trade-in of 1541 Drive
$CALL for your system

Star NX-1000



$99 NEW

with trade-in of MPS-1200 printer
$CALL for your system

$Cash for your equipment
Thousands of software & book titles
Plus MUCH, MUCH MORE!

2017 13th Street Suite A
Boulder, CO 80302

✓✓CALL about CRI IBM Compatible Computers. One full year warranty - One hundred percent IBM hardware and software compatible. 2.5 as fast as Genuine IBM.✓✓

All references to trade-ins assume equipment to be in good working condition. Shipping/handling will be added to all prices. No additional charge for credit cards or COD. Mail order prices shown.
WE CHECK FOR CREDIT CARD THEFT!

IF YOU DON'T SEE IT, CALL!!

1-303-939-8144

24 HR Modem Software Quotes: 1-303-939-8174

Authorized Dealers for COMMODORE/AMIGA ATARI ST/XL/X and IBM Compatible Computers and Accessories.

VISA MASTERCARD DISCOVER AMERICAN EXPRESS COD

The Holiday Software

Gifts, Games And More From The Original

4th & Inches™

Football so real you'll need a helmet and shoulder pads!

Hard-hitting pro football action, complete with blitzes, bombs, and goal line stands. To win you need the moves of a star player and the genius of a veteran coach. Superb graphics and animation.

~~$29.95~~ List Price — **$16.88** Ultra Saver Price

HOT SELLERS

Bard's Tale 3: The Thief of Fate	$26
California Games	$24
Carmen Sandiego: Europe	$25
Carmen Sandiego: USA	$25
GEOS 64 (2.0)	$39
Impossible Mission 2	$24
Paperclip Publisher	$33
Advanced Dungeons & Dragons: Pool of Radiance	$26
Wasteland	$26
Wheel of Fortune	$8.88

BARGAIN BASEMENT

Accolade

Ace of Aces	$9.88
Fight Night	$9.88
4th & Inches Team Construction Disk	$9.88
Hardball	$9.88
Killed Until Dead	$9.88

Activision

Aliens	$9.88
Cross Country Road Race	$9.88
Ghostbusters	$9.88
Hacker I or 2	$9.88 Ea.
Little Computer People	$9.88
Transformers	$9.88

Artworx

Beach Blanket Volleyball	$9.88
Equestrian Show Jumper	$9.88
Highland Games	$9.88
Thai Boxing	$9.88

Avantage

Deceptor	$9.88
Desert Fox	$9.88
Jet Boys	$9.88
Plasmatron	$9.88
Power	$9.88
Project Space Station	$9.88
Sigma 7	$9.88
Spy vs. Spy I & 2	$9.88

Box Office

Alf	$9.88
High Rollers	$9.88
$100,000 Pyramid	$9.88

Broderbund

Cauldron	$9.88
Choplifter/David's Midnight Magic	$9.88
Karateka	$9.88
Loderunner	$9.88
Magnetron	$9.88

CBS

Argos Expedition	$4.88
Math Mileage	$4.88
Timebound	$4.88
Weather Tamers	$4.88

CDA

America Cooks Series: American	$9.88
Chinese	$9.88
French	$9.88
Italian	$9.88
Mexican	$9.88

Data East

Express Raiders	$8.88
Q-Bert	$8.88
TNK III	$8.88

Datasoft

Conan	Call
Zorro	Call

Easy Working/Spinnaker

Filer	$6.88
Planner	$6.88
Writer	$6.88

Electronic Arts

Adv. Const. Set	$9.88
Arctic Fox	$9.88
Earth Orbit Station	$9.88
Lords of Conquest	$9.88
Marble Madness	$9.88
Movie Maker	$9.88
Music Const. Set	$9.88
One-on-One	$9.88
Patton vs. Rommel	$9.88
Pinball Const. Set	$9.88
Racing Dest. Set	$9.88
Seven Cities of Gold	$9.88
Skyfox	$9.88
Super Boulder Dash	$9.88
Ultimate Wizard	$9.88
World Tour Golf	$9.88

EPYX

Gateway to Apshai	$6.88
Pitstop 2	$6.88
PS Graphics Scrapbook: #1: Sports	$9.88
PS Graphics Scrapbook: #2: Off the Wall	$9.88
PS Graphics Scrapbook: #3: School	$9.88

Gamestar

Champ. Baseball	$9.88
Champ. Basketball	$9.88
On Court Tennis	$9.88
Star League Baseball/ On Field Football	$9.88

HES

Microsoft Multiplan	$9.88

Hi-Tech Expressions

Award Ware	$9.88
Card Ware	$6.88
Matterhorn Screamer	$6.88
Party Ware	$9.88
Print Power	$9.88
Tom Sawyer's Island	$6.88
Win, Lose or Draw	$9.88

High-Tech Expressions

Sesame Street Series: Astro-Grover	$6.88
Sesame Street Series: Big Bird's Special Delivery	$6.88
Sesame Street Series: Ernie's Big Splash	$6.88
Sesame Street Series: Ernie's Magic Shapes	$6.88
Sesame Street Series: Grover's Animal Adventures	$6.88
Sesame Street Series: Pals Around Town	$6.88
Sesame St. Print Kit	$9.88

Infocom

Hitchhiker's Guide	$9.88
Infocomics: Gamma Force	$8.88
Infocomics: Lane Mastadon	$8.88
Infocomics: Zork Quest	$8.88
Leather Goddesses	$9.88
Zork I	$9.88

Konami/Action City

Circus Charlie	$9.88
Hyper Sports/Ping Pong	$9.88
Track & Field	$9.88

Mastertronic

Action Biker	$4.88
Bounder	$6.88
Captain Zap	$6.88
Energy Warrior	$6.88
Excaliba	$4.88
Feud	$6.88
Kane	$4.88
Last V-8	$4.88
Ninja	$4.88
Pro Golf	$4.88
Prowler; War in 7150	$6.88
Shogun	$6.88
Speed King	$6.88
Squash	$6.88
Storm	$6.88
Vegas Poker & Jackpot	$4.88
Water Polo	$6.88
Wing Commander	$4.88

Mindscape

Tink's Adventure	$4.88
Tinka's Mazes	$4.88
Tonk in the Land of Buddy Bots	$4.88
Tuk Goes to Town	$4.88

Sega

Congo Bongo®	$4.88

Bubble Ghost™

Supernatural arcade action that'll blow you away!

A bubble-blowing phantom. An eerie castle. 35 trap-laden rooms. Spikes and scissors. Gizmos and ghouls. It all adds up to Bubble Ghost, one of the most exciting arcade games in years.

~~$29.95~~ List Price — **$16.88** Ultra Saver Price

Super Zaxxon®	$4.88

Share Data

Concentration	$9.88
Family Feud	$8.88
Jeopardy	$8.88
Jeopardy 2	$9.88
Wheel of Fortune 2	$9.88

Sierra

Frogger	$6.88
Grog's Revenge	$6.88
Wizard & The Princess	$6.88
Wiz Type	$6.88

Simon & Schuster

Great Int'l. Paper Airplane Construction Set	$9.88

Spectrum Holobyte

Gato	$9.88

Spinnaker

Cosmic Combat	$4.88
Dark Tower	$4.88
Delta Drawing	$4.88
Facemaker	$4.88
Film Maker	$4.88
Fraction Fever	$4.88
Gold Record Race	$4.88
Karate Chop	$4.88
Learn the Alphabet	$4.88
Learn to Spell	$4.88
Learn to Add	$4.88
Railroad Tycoon	$4.88
Ranch	$4.88
Story Machine	$4.88

SSI

Gemstone Healer	$9.88
Gemstone Warrior	$9.88
Questron	$9.88

Telarium

Nine Princes in Amber	$9.88
Perry Mason: Case of Mandarin Murder	$9.88

Thunder Mountain

Army Moves	$6.88
Dig Dug	$6.88
Doc the Destroyer	$6.88
Felony	$6.88
Galaxian	$6.88
Great Escape	$6.88
Implosion	$9.88
Jr. Pac Man	$6.88
Leviathan	$6.88
Ms. Pac Man	$6.88
Murder by the Dozen	$6.88
Music Writer	$6.88
Mutants	$9.88
Pac Man	$6.88
Pole Position	$6.88
Rambo: First Blood Part II	$6.88
Slot Car Racer	$6.88
Super Pac Man	$9.88
Tai-Pan	$9.88
Tau-Ceti	$9.88
Top Gun	$6.88
Winter Challenge	$9.88
Wizball	$9.88

Value Ware

Artist	$4.88
Educator	$4.88
Entertainer	$4.88
Home Rancher	$4.88
Home Manager	$4.88
Kitchen Manager	$4.88

SUPER SAVERS

Abacus Books

Anatomy of the 1541	$14
Anatomy of the 64	$14
1571 Internals	$14
GEOS Inside & Out	$13
GEOS Tricks & Tips	$13

Abacus Software

Assembler Monitor	$25
Basic	$25
Basic 128	$39
Becker Basic*	$33
Cad Pak	$25
Cad Pak 128	$39
Chart Pak	$25
Chart Pak 128	$25
Cobol	$25
Cobol 128	$25
Fortran	$25
PPM	$25
PPM 128	$39
Speed Term 64 or 128	$25
Super C	$39
Super C 128	$39
Super Pascal	$39
Super Pascal 128	$39
TAS	$25
TAS 128	$39

*Requires GEOS!

Access

Echelon w/Lip Stik	$29
Famous Course Disk #1 for World Class L.B.	$14
Famous Course Disk #2 for World Class L.B.	$14
Famous Course Disk #3 for World Class L.B.	$14
Leader Board (Original) 3 Pack	$14
Tenth Frame	$25
Triple Pack: BH1, BH2, Raid Over Moscow	$14
World Class Leader Board	$25

Accolade

Apollo 18: Mission to the Moon	$19
Card Sharks	$19
Fast Break	$19
Mini Putt	$19
Power at Sea	$19
Rack 'Em	Call
Serve & Volley	Call
Test Drive	$19
The Train: Escape to Normandy	$19
T.K.O.	Call

Action Soft

Thunder Chopper	$19
Up Periscope!	$19

Activision

Black Jack Academy	$25
Crossbow	$19
Mainframe	$23
Maniac Mansion	$23
Might & Magic	$25
Music Studio	$23
Postcards	$16
Shanghai	$19
Sky Travel	$33
The Last Ninja	$23
Zak McKracken	$23

"Call today. We're open extended holiday hours."

To Order Call:

U.S. & Canada

1-800-225-7638

(PA — 1-800-223-7784)

Visit Us On CompuServe (GO SDA) or GEnie (SDA)

American Educational

Biology	$12
Learn to Read (Gr. 1-4)	$25
Science: Grades 3/4	$12
Science: Grades 5/6	$12
Science: Grades 7/8	$12
US Geography	$12
US History	$12
World Geography	$12
World History	$12

Artworx

Bridge 5.0	$19
Cycle Knight	$14
Daily Double Horse Racing	$14
International Hockey	$14
Linkword French	$16
Linkword German	$16
Linkword Russian	$16
Linkword Spanish	$16
Strip Poker	$21
Data Disk #1 Female	$14
Data Disk #2 Male	$14
Data Disk #3 Female	$14

Avalon Hill

NBA Basketball	$25
NBA '86 Season Disk	$14
Spitfire '40	$23
Super Sunday	$21
SBS 1986 Team Disk	$14
SBS Gen. Mgr. Disk	$19
Under Fire	$23

Things you should know.

We place these ads months in advance, so prices and availability can change (usually for the better). We accept charge cards, cashiers checks, money orders, and personal checks (3 weeks clearance). Free shipping on orders over $100 in the continental U.S. On orders *under* $100, add $3.00. For AK, HI, FPO, APO, add $5.00 to *all* orders. For Canada & Puerto Rico, add $7.50 to *all* orders. You must call for a Return Authorization # before returning defective merchandise. We will replace defective merchandise with the same merchandise; other returns are subject to a 20% restocking fee. Order lines open M-TH 9:00 AM-7:00 PM; FRI 9:00 AM-5:30 PM; SAT 10:00 AM-4:00 PM Eastern Time. Extended holiday hours (11/1/88-12/15/88) M-TH 9 AM-9 PM; FRI 9 AM-6 PM; SAT 10:00 AM-4:00 PM. For information or customer service, call 412-361-5291 M-F 9:00 AM-5:30 PM Eastern Time.

Over 1900 products in stock • If you don't see the item you want, cal

• No surcharge for VISA/MasterCard

Superstore
Software Discounters

*UP TO 50% OFF

Batteries Included
Paperclip 3 ..... $33
Paperclip Publisher $33

Baudville
Award Maker Plus $23
Blazing Paddles $23
Video Vegas $19

Berkeley Softworks
Geos 128 ..... $44
Geo-Calc 128 ..... $44
Geo-File 128 ..... $44
Geo-Write Workshop 128 $44
Geos 2.0 ..... $39
Desk Pack Plus* $19
Font Pack Plus* $19
Geo-Calc* $33
Geo-File* $33
Geo-Programmer* $44
Geo-Publish* $33
*Requires GEOS 64!

Box Office
California Raisins $16
Psycho $16

Broderbund
Bank St. Writer $33
Carmen Sandiego: World $23
Downhill Challenge ..... Call
Print Shop $26
P.S. Companion $23
P.S. Graphics Library #1, #2, or #3 ..... $16 Ea.
P.S. Graphics Library Holiday Edition $16
Toy Shop $19

Capcom
Bionic Commando $19
Ghosts & Goblins $19
Gunsmoke $19
Side Arms $19
Speed Rumbler $19

Central Point
Copy 2 ..... $23

Cinemaware
Defender of the Crown $23
Sinbad: Throne of the Falcon $23
The Three Stooges $23
Warp Speed® $33

CMS
General Acct. 128 ..... $119
Inventory 128 ..... $49

Data East
Breakthru $19
Commando $14
Ikari Warriors $19
Karnov $19
Kid Niki $19
Lock On ..... Call
Platoon $19
Speed Buggy $19
Tag Team Wrestling $14
Victory Road ..... Call

Datasoft
Alternate Reality: The City $19
Alternate Reality: The Dungeon $19
Battle Droidz $19
Bismarck $19
Cosmic Relief $19
Dark Lord $14
Global Commander $19
Hunt for Red October $26
Rubicon Alliance $14
Tobruk $21
Tomahawk $21
Video Title Shop w/Graphics Companion $21

Davidson
Algeblaster $32
Math Blaster $32
Spell It $32
Word Attack $32

WINNERS

THIS MONTH'S WINNERS OF SUMMER GAMES ARE

Craig S. Wheeler
Altoona, PA

Patricia A. Talmager
Ghent, NY

Jack H. Schrimsher
Kansas City, MO

Lynn Parsons
West Tremont, ME

Glenn C. McClymont
Kanata, Ontario (CAN)

George Kirn
Hollywood, FL

Patricia S. Hinojosa
El Paso, TX

Glenn Eisenbrandt
Ft. Atkinson, WI

Alena Carsey
Flagstaff, AZ

Norma M. Bennett
Warsaw, NY

Winners must contact us by 12/31/88 to claim their prize. No purchase necessary.

We're giving away hundreds of $ in software to people on our mailing list every month. Not on our list? Give us a call and you could be a winner, too.

Designware
Body Transparent $19
Spellicopter $19

Digital Solutions
Pocket Filer 2 ..... $19
Pocket Planner 2 ..... $19
Pocket Writer 2 ..... $33
*All 3 in 1 Super Pack $59

Digitek
Vampire's Empire $19

Electronic Arts
Alien Fires $19
Bard's Tale 1 or 2 ..... $26 Ea.
Bard's Tale 1, 2 or 3 Hints ..... $9 Ea.
Caveman Ugh-lympics $21
Chessmaster 2000 ..... $26
Chuck Yeager's AFT $23
Deathlord $21
Demon Stalker $21
Dragon's Lair $19
Instant Music $21
Jordan vs. Bird $21
Legacy of Ancients $21
Master Ninja $19
Modem Wars $23
Monopoly $21
Pegasus $21
Roadwars $21
Rockford $21
Scrabble $23
Scruples $23
Skyfox 2 ..... $21
Skate or Die $21
Star Fleet 1 ..... $26
Strike Fleet $21
The Mars Saga $23
Twilights Ransom $23

EPYX
Boulder Dash Construction Kit $14
Champ. Wrestling $14
Create A Calendar $19
Death Sword $19
Destroyer $24
Fast Load® $24
Final Assault $24
4 x 4 Off Road Racing $24
L.A. Crackdown $24
Metrocross $16
Rad Warrior $14
Sporting News Baseball $24
Street Sports: Baseball $14
Street Sports: Basketball $14
Street Sports: Soccer $14
Spy vs. Spy 3: Arctic Antics $14
Sub Battle Simulator $24
Summer Games $14
Summer Games 2 ..... $14
Temple Apshai Trilogy $14
The Games: Summer Edition $24
The Games: Winter Edition $24
Tower Toppler $24
Winter Games $14
World Games $14

Gamestar
GFL Ch. Football $23
Star Rank Boxing 2 ..... $19
Top Fuel Eliminator $19

Infocom
Beyond Zork 128 ..... $29
Border Zone $23
Sherlock: The Riddle of the Crown Jewels $23
Zork Trilogy $29

Inkwell Systems
#170 Deluxe L.P. $69
#184C Light Pen $44
Flexidraw 5.5 ..... $23
Graphics Galleria #1 ..... $19
Graphics Galleria #2 ..... $19
Graphics Intregrator 2 ..... $19

Intracorp
Bumper Sticker Maker $33
Business Card Maker $25
Button & Badge Maker $33

Logical Design
Club Backgammon $19
Vegas Craps $19
Vegas Gambler $19

Melbourne House
Barbarian $19
John Elway's QB $19

Microleague
Baseball $25
Box Score Stats $16
General Manager $19
1986 Team Data Disk $14
1987 Team Data Disk $14
WWF Wrestling $19

Microprose
Airborne Ranger $23
F-15 Strike Eagle $23
Gunship $23
Pirates $25
Project Stealth Fighter $25
Red Storm Rising $25
Silent Service $23

Mindscape
Alien Syndrome ..... Call
Bad Street Brawler $19
Blockbuster $19
Captain Blood ..... Call
Clubhouse Sports $19
Color Me: The Computer Coloring Kit $23
Crossword Magic $19
Deeper Dungeons* $16
De Ja Vu $23
Gauntlet $23
Harrier Combat Sim. $19
Indiana Jones & The Temple of Doom $23
Indoor Sports $19
Infiltrator 2 ..... $19
Into the Eagle's Nest $19
Out Run ..... Call
MISL Soccer $23
Paperboy $23
Perfect Score SAT $44
Power Players Joystick $19
Road Runner $23
720 ..... Call
Space Harrier ..... Call
Super Star Ice Hockey $23
Super Star Soccer $23
Uninvited ..... Call
*Requires Gauntlet!

MISC
Bob's Term Pro $29
Bob's Term Pro 128 ..... $39
Doodle $25
Final Cartridge 3 ..... $47
Font Master 2 ..... $29
Font Master 128 ..... $35

Origin
Autoduel $25
Moebius $25
Ultima 1 or 3 ..... $25 Ea.
Ultima 4 ..... $39
Ultima 5 ..... $39

Professional
Fleet System 2 Plus $33
Fleet System 4 128 ..... $43

Rainbird
Black Lamp $14
Enlightenment $14
Guild of Thieves $25
Jinxter $23
Starglider $14

Simon & Schuster
JK Lasser Money Mgr. $14
Typing Tutor 4 ..... $19

Sir Tech
Deep Space $25
Wizardry Series: Knight of Diamonds $25
Wizardry Series: Proving Ground $25

Springboard
Certificate Maker $14
C.M. Library Vol. 1 ..... $9.88
Newsroom $14
N.R. Clip Art Vol. 1 ..... $9.88
N.R. Clip Art Vol. 2 ..... $9.88
N.R. Clip Art Vol. 3 ..... $9.88
P.S. Graphics Expander $23

SSI
Advanced Dungeons & Dragons: Heroes of the Lance $21
Battle of Antietam $32
B-24 ..... $23
Demon's Winter $21
Eternal Dagger $26

Ultra Saver

Rastan

Arcade adventure in an ancient world of danger!

Visit ancient, mythical Lograth, where you battle evil Lords, slay deadly dragons, and accumulate magic powers to defeat the mighty Castle King.

~~$34.95~~ List Price

$19.88 Ultra Saver Price

Gettysburg $39
Kampfgruppe $39
Panzer Strike! $29
Phantasie 1, 2 or 3 ..... $26 Ea.
Questron 2 ..... $26
Rings of Zilfin $26
Roadwar 2000 ..... $26
Roadwar Europa $26
Shard of Spring $26
Shiloh: Grant's Trial $26
Sons of Liberty $23
Typhoon of Steel $32
War Game Const. Set $21
War in S. Pacific $39
Warship $39
Wizard's Crown $26

Sublogic
Flight Simulator 2 ..... $32
F.S. Scenery Disks ..... Call
Jet $26
Stealth Mission $32

Taito
Arkanoid $19
Alcon $19
Bubble Bobble $23
Renegade $23

Three Sixty
Dark Castle $23
Warlock ..... Call

Timeworks
Data Manager 2 ..... $14
Data Manager 128 ..... $33
Evelyn Wood Reader $14
Partner 64® $25
Partner 128® $33
Swiftcalc/Sideways $19
Swiftcalc/Sideways 128 ..... $33
Sylvia Porter's Personal Fin. Planner 64 ..... $25
Sylvia Porter's Personal Fin. Planner 128 ..... $33
Word Writer 3 ..... $25
Word Writer 128 ..... $33

Unicorn
Decimal Dungeon $19
Fraction Action $19
Percentage Panic $19
Race Car Rithmetic $19
Ten Little Robots $19

Unison World
Art Gallery 1 or 2 ..... $16 Ea.
Art Gallery 3: Fantasy $16
Print Master Plus $23

Weekly Reader
Stickybear Series: ABC's $16
Stickybear Series: Math 1 or 2 ..... $16 Ea.
Stickybear Series: Numbers $16
Stickybear Series: Opposites $16
Stickybear Series: Reading $16
Stickybear Series: Spellgrabber $16
Stickybear Series: Typing $16

Accessories
Animation Station $49
Bonus SS, DD ..... $4.99 Bx.
Bonus DS, DD ..... $5.99 Bx.
Compuserve Starter Kit $19
Contriver Mouse $33
Disk Case (Holds 75) $6.88
Disk Drive Cleaner $6.88
Epyx 500 XJ Joystick $14
Icontroller $14
Wico Bat Handle $17
Wico Boss $12
Wico Ergostick J.S. $19
XETEC Super Graphix $59
XETEC Super Graphix Gold $89
XETEC Super Graphix Jr. $39
*All programs on disk-unless otherwise noted.

Software Discounters Of America

SD of A

P.O. Box 111327 — Dept. CG — Blawnox, PA 15238

© 1988 SDA

- Free shipping on orders over $100 in Continental U.S.
- Your card is not charged until we ship

```
JC 390 CK=CK+Z5*(CK>Z5):RETURN
QS 400 PRINT"{DOWN}STARTING AT
       [4]";:GOSUB300:IF IN$<>
       N$ THEN GOSUB1030:IF F
       {SPACE}THEN400
EX 410 RETURN
HD 420 PRINT"{RVS} ENTER DATA
       {SPACE}":GOSUB400:IF IN
       $=N$ THEN220
JK 430 OPEN3,3:PRINT
SK 440 POKE198,0:GOSUB360:IF F
        THEN PRINT IN$:PRINT"
       {UP}{5 RIGHT}";
GC 450 FOR I=0 TO 24 STEP 3:B$
       =S$:FOR J=1 TO 2:IF F T
       HEN B$=MID$(IN$,I+J,1)
HA 460 PRINT"{RVS}"B$L$;:IF I<
       24THEN PRINT"{OFF}";
HD 470 GET A$:IF A$=N$ THEN470
FK 480 IF(A$>"/"ANDA$<":")OR(A
       $>"@"ANDA$<"G")THEN540
GS 485 A=-(A$="M")-2*(A$=",")-
       3*(A$=".")-4*(A$="/")-5
       *(A$="J")-6*(A$="K")
FX 486 A=A-7*(A$="L")-8*(A$=":
       ")-9*(A$="U")-10*(A$="I
       ")-11*(A$="O")-12*(A$="
       P")
CM 487 A=A-13*(A$=S$):IF A THE
       N A$=MID$("ABCD123E456F
       0",A,1):GOTO 540
MP 490 IF A$=R$ AND((I=0)AND(J
       =1)OR F)THEN PRINT B$;:
       J=2:NEXT:I=24:GOTO550
KC 500 IF A$="{HOME}" THEN PRI
       NT B$:J=2:NEXT:I=24:NEX
       T:F=0:GOTO440
MX 510 IF(A$="{RIGHT}")ANDF TH
       ENPRINT B$L$;:GOTO540
GK 520 IF A$<>L$ AND A$<>D$ OR
       ((I=0)AND(J=1))THEN GOS
       UB1060:GOTO470
HG 530 A$=L$+S$+L$:PRINT B$L$;
       :J=2-J:IF J THEN PRINT
       {SPACE}L$;:I=I-3
QS 540 PRINT A$;:NEXT J:PRINT
       {SPACE}S$;
PM 550 NEXT I:PRINT:PRINT"{UP}
       {5 RIGHT}";:INPUT#3,IN$
       :IF IN$=N$ THEN CLOSE3:
       GOTO220
QC 560 FOR I=1 TO 25 STEP3:B$=
       MID$(IN$,I):GOSUB320:IF
        I<25 THEN GOSUB380:A(I
       /3)=A
PK 570 NEXT:IF A<>CK THEN GOSU
       B1060:PRINT"{BLK}{RVS}
       {SPACE}ERROR: REENTER L
       INE [4]":F=1:GOTO440
HJ 580 GOSUB1080:B=BS+AD-SA:FO
       R I=0 TO 7:POKE B+I,A(I
       ):NEXT
QQ 590 AD=AD+8:IF AD>EA THEN C
       LOSE3:PRINT"{DOWN}{BLU}
       ** END OF ENTRY **{BLK}
       {2 DOWN}":GOTO700
GQ 600 F=0:GOTO440
QA 610 PRINT"{CLR}{DOWN}{RVS}
       {SPACE}DISPLAY DATA ":G
       OSUB400:IF IN$=N$ THEN2
       20
RJ 620 PRINT"{DOWN}{BLU}PRESS:
        {RVS}SPACE{OFF} TO PAU
       SE, {RVS}RETURN{OFF} TO
        BREAK[4]{DOWN}"
KS 630 GOSUB360:B=BS+AD-SA:FOR
       I=BTO B+7:A=PEEK(I):GOS
       UB350:GOSUB380:PRINT S$
       ;
CC 640 NEXT:PRINT"{RVS}";:A=CK
       :GOSUB350:PRINT
KH 650 F=1:AD=AD+8:IF AD>EA TH
       ENPRINT"{DOWN}{BLU}** E
       ND OF DATA **":GOTO220
KC 660 GET A$:IF A$=R$ THEN GO
       SUB1080:GOTO220
EQ 670 IF A$=S$ THEN F=F+1:GOS
       UB1080
AD 680 ONFGOTO630,660,630
CM 690 PRINT"{DOWN}{RVS} LOAD
       {SPACE}DATA ":OP=1:GOTO
       710
PC 700 PRINT"{DOWN}{RVS} SAVE
       {SPACE}FILE ":OP=0
RX 710 IN$=N$:INPUT"{DOWN}FILE
       NAME[4]";IN$:IF IN$=N$
       {SPACE}THEN220
PR 720 F=0:PRINT"{DOWN}{BLK}
       {RVS}T{OFF}APE OR {RVS}
       D{OFF}ISK: [4]";
FP 730 GET A$:IF A$="T"THEN PR
       INT"T{DOWN}":GOTO880
HQ 740 IF A$<>"D"THEN730
HH 750 PRINT"D{DOWN}":OPEN15,8
       ,15,"I0:":B=EA-SA:IN$="
       0:"+IN$:IF OP THEN810
SQ 760 OPEN 1,8,8,IN$+",P,W":G
       OSUB860:IF A THEN220
FJ 770 AH=INT(SA/256):AL=SA-(A
       H*256):PRINT#1,CHR$(AL)
       ;CHR$(AH);
PE 780 FOR I=0 TO B:PRINT#1,CH
       R$(PEEK(BS+I));:IF ST T
       HEN800
FC 790 NEXT:CLOSE1:CLOSE15:GOT
       O940
GS 800 GOSUB1060:PRINT"{DOWN}
       {BLK}ERROR DURING SAVE:
       [4]":GOSUB860:GOTO220
MA 810 OPEN 1,8,8,IN$+",P,R":G
       OSUB860:IF A THEN220
GE 820 GET#1,A$,B$:AD=ASC(A$+Z
       $)+256*ASC(B$+Z$):IF AD
       <>SA THEN F=1:GOTO850
RX 830 FOR I=0 TO B:GET#1,A$:P
       OKE BS+I,ASC(A$+Z$):IF(
       I<>B)AND ST THEN F=2:AD
       =I:I=B
FA 840 NEXT:IF ST<>64 THEN F=3
FQ 850 CLOSE1:CLOSE15:ON ABS(F
       >0)+1 GOTO960,970
SA 860 INPUT#15,A,A$:IF A THEN
        CLOSE1:CLOSE15:GOSUB10
       60:PRINT"{RVS}ERROR: "A
       $
GQ 870 RETURN
EJ 880 POKE183,PEEK(FA+2):POKE
       187,PEEK(FA+3):POKE188,
       PEEK(FA+4):IFOP=0THEN92
       0
HJ 890 SYS 63466:IF(PEEK(783)A
       ND1)THEN GOSUB1060:PRIN
       T"{DOWN}{RVS} FILE NOT
       {SPACE}FOUND ":GOTO690
CS 900 AD=PEEK(829)+256*PEEK(8
       30):IF AD<>SA THEN F=1:
       GOTO970
SC 910 A=PEEK(831)+256*PEEK(83
       2)-1:F=F-2*(A<EA)-3*(A>
       EA):AD=A-AD:GOTO930
KM 920 A=SA:B=EA+1:GOSUB1010:P
       OKE780,3:SYS 63338
JF 930 A=BS:B=BS+(EA-SA)+1:GOS
       UB1010:ON OP GOTO950:SY
       S 63591
AE 940 GOSUB1080:PRINT"{BLU}**
        SAVE COMPLETED **":GOT
       O220
XP 950 POKE147,0:SYS 63562:IF
       {SPACE}ST>0 THEN970
FR 960 GOSUB1080:PRINT"{BLU}**
        LOAD COMPLETED **":GOT
       O220
DP 970 GOSUB1060:PRINT"{BLK}
       {RVS}ERROR DURING LOAD:
       {DOWN}[4]":ON F GOSUB98
       0,990,1000:GOTO220
PP 980 PRINT"INCORRECT STARTIN
       G ADDRESS (";:GOSUB360:
       PRINT")":RETURN
GR 990 PRINT"LOAD ENDED AT ";:
       AD=SA+AD:GOSUB360:PRINT
       D$:RETURN
FD 1000 PRINT"TRUNCATED AT END
       ING ADDRESS":RETURN
RX 1010 AH=INT(A/256):AL=A-(AH
       *256):POKE193,AL:POKE1
       94,AH
FF 1020 AH=INT(B/256):AL=B-(AH
       *256):POKE174,AL:POKE1
       75,AH:RETURN
FX 1030 IF AD<SA OR AD>EA THEN
       1050
HA 1040 IF(AD>511 AND AD<40960
       )OR(AD>49151 AND AD<53
       248)THEN GOSUB1080:F=0
       :RETURN
HC 1050 GOSUB1060:PRINT"{RVS}
       {SPACE}INVALID ADDRESS
        {DOWN}{BLK}":F=1:RETU
       RN
AR 1060 POKE SD+5,31:POKE SD+6
       ,208:POKE SD,240:POKE
       {SPACE}SD+1,4:POKE SD+
       4,33
DX 1070 FOR S=1 TO 100:NEXT:GO
       TO1090
PF 1080 POKE SD+5,8:POKE SD+6,
       240:POKE SD,0:POKE SD+
       1,90:POKE SD+4,17
AC 1090 FOR S=1 TO 100:NEXT:PO
       KE SD+4,0:POKE SD,0:PO
       KE SD+1,0:RETURN
```

COMPUTE!'s Gazette is looking for utilities, games, applications, educational programs, and tutorial articles. If you've created a program that you think other readers might enjoy or find useful, send it, on tape or disk, to:

Submissions Reviewer
COMPUTE! Publications
P.O. Box 5406
Greensboro, NC 27403

Please enclose an SASE if you wish to have the materials returned. Articles are reviewed within four weeks of submission.

Wright Computer

ENTERTAINMENT SOFTWARE	LIST PRICE	WRIGHT PRICE
Barbarian	$29.99	$20
Bard's Tale I, II, Or III	40.00	26
California Raisins	24.99	16
Deeper Dungeons (Gauntlet)	24.95	16
Defender Of Crown	34.95	23
Elway Quarterback	29.99	20
Gauntlet	39.95	26
Harrier Combat Simulator	29.95	20
King Of Chicago	34.95	23
Maniac Mansion	34.95	23
Paperboy	39.95	26
Pool Of Radiance	40.00	26
Questron II	39.95	26
Road Runner	34.95	23
Terrorpods	29.99	20
Three Stooges	34.95	23
Twilight Zone	39.95	26
Twilight's Ransom	39.95	26
Ultima IV Or V	59.95	39
War In Middle Earth	59.99	39

VISA · MASTERCARD
(316) 681-0331
Call Collect

Wright Computer
P.O. Box 780444
Wichita, KS 67278-0444

*SEND FOR COMPLETE LISTING
**TITLES & PRICES ARE IBM 5¼" FORMAT
***OTHER FORMATS AVAILABLE.

Same Day Shipping (subject to availability)

Order by mail with money order or check (check orders not shipped until cleared). Do not send cash.

SHIPPING: Add $2.50 for shipping and handling. Kansas residents add 5% sales tax. Prices subject to change.

AMIGA™

AMIGA 500 COMPUTER	$ 545.95
AMIGA 2000 COMPUTER	$1445.95
AMIGA 501 512K RAM	$ 149.95
AMIGA 2052 2MEG RAM	$ 399.95
AMIGA 2088D BRIDGECARD	$ 499.95
AMIGA 1010 EXTERNAL DRIVE	$ 199.00
AMIGA 2090 HARD DRIVE CONTROLLER	$ 319.00

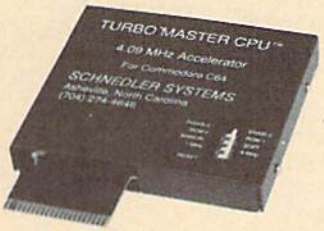
commodore

64-C COMPUTER	$159.95	LT KERNAL 20M 64	$ 799.95
128D COMPUTER	$449.95	LT KERNAL 40M 64	$1295.95
1764 256K RAM	$118.95	LT KERNAL 20M 128	$ 849.95
1750 512K RAM	$149.95	LT KERNAL 40M 128	$1345.95
1571 DRIVE	$221.95	AVATEX 1200E MODEM	$ 79.95
1581 DRIVE	$179.95	AVATEX 1200HC MODEM	$ 99.95
1541-II DRIVE	$175.95	AVATEX 2400 MODEM	$ 179.95
1670 MODEM	$ 79.95	OMNITRONIX INTER	$ 45.95
1680 MODEM	$ 99.00	SKYLES QUICKSILVER	$ 119.95
SUPRA 2400 MODEM	$149.95	IEEE-IEEE CABLE	$ 35.95
C-NET 64 BBS	$ 64.95	C-NET 128 BBS	$ 89.95

SOFTECH COMPUTER SYSTEMS
Post Office Box 23397
Lexington, KY 40523
(606)/268-2283
(800)/992-SCSI (Orders)
No surcharge for MC/VISA

Sorry, no walk-in customers. All returns must have an RMA#. Merchandise found to be defective will be repaired or replaced. We do not offer refunds for defective products or for products that do not perform satisfactorily. Prices are subject to change without notice.

Introducing the World's Eighth Wonder.

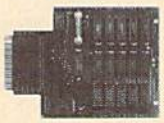


TURBO MASTER CPU™

4.09 MHz Accelerator Cartridge for C64

- Four times faster processing speed combined with five times faster disk Load and Save.
- Software actually *runs* four times as fast. Basic, word-processor scrolling and search, spreadsheets, assemblers, graphics, GEOS etc. Compatible with most software.
- Why upgrade when you can enjoy dazzling performance from your C64 now?
- Introductory price only $179.

Data acquisition and control interfaces C64 & C128



80-line Simplified Digital I/O Board
with ROM cartridge socket
Model SS100 Plus $129. Additional $119.

Original Ultimate Interface
Universally applicable dual 6522 versatile interface adapter board.
Model 64IF22 $169. Additional $149.

16-Channel, 8-bit analog-to-digital conversion module.
Requires model 64IF22. Model 64IF/ADC0816 $69.

Interface boards include extensive documentation and program disk. Manuals available separately for examination. Call or write for detailed brochure.

Resources for Serious Programmers

- Symbol Master Multi-Pass Symbolic Disassembler. C64 & C128. $49.95
- PTD6510 super-powerful Symbolic Debugger. C64. $49.95
- MAE64 6502/65C02 Macro Editor /Assembler. $29.95
- C64 Source Code Book. Kernal and Basic ROMs. $29.95

SCHNEDLER SYSTEMS

"We engineer miracles."

Dept. G12, 25 Eastwood Road, P.O. Box 5964
Asheville, North Carolina 28813 Telephone: (704) 274-4646

VISA and Mastercard accepted.
All prices include shipping prepaid to US addresses.

The Automatic Proofreader

Philip I. Nelson

"The Automatic Proofreader" helps you type in program listings for the 128, 64, Plus/4, and 16 and prevents nearly every kind of typing mistake.

Type in the Proofreader *exactly* as listed. Since the program can't check itself, type carefully to avoid mistakes. Don't omit any lines, even if they contain unfamiliar commands. After finishing, save a copy or two on disk or tape before running it. This is important because the Proofreader erases the BASIC portion of itself when you run it, leaving only the machine language portion in memory.

Next, type RUN and press RETURN. After announcing which computer it's running on, the Proofreader displays the message "Proofreader Active". Now you're ready to type in a BASIC program.

Every time you finish typing a line and press RETURN, the Proofreader displays a two-letter checksum in the upper-left corner of the screen. Compare this result with the two-letter checksum printed to the left of the line in the program listing. If the letters match, it's almost certain the line was typed correctly. If the letters don't match, check for your mistake and correct the line.

The Proofreader ignores spaces not enclosed in quotes, so you can omit or add spaces between keywords and still see a matching checksum. However, since spaces inside quotes are almost always significant, the Proofreader pays attention to them. For example, **10 PRINT"THIS IS BASIC"** will generate a different checksum than **10 PRINT"THIS ISBA SIC"**.

A common typing error is transposition—typing two successive characters in the wrong order, like PIRNT instead of PRINT or 64378 instead of 64738. The Proofreader is sensitive to the *position* of each character within the line and thus catches transposition errors.

The Proofreader does *not* accept keyword abbreviations (for example, ? instead of PRINT). If you prefer to use abbreviations, you can still check the line by LISTing it after typing it in, moving the cursor back to the line, and pressing RETURN. LISTing the line substitutes the full keyword for the abbreviation and allows the Proofreader to work properly. The same technique works for rechecking programs you've already typed in.

If you're using the Proofreader on the Commodore 128, Plus/4, or 16, *do not perform any GRAPHIC commands while the Proofreader is active.* When you perform a command like GRAPHIC 1, the computer moves everything at the start of BASIC program space—including the Proofreader—to another memory area, causing the Proofreader to crash. The same thing happens if you *run* any program with a GRAPHIC command while the Proofreader is in memory.

Though the Proofreader doesn't interfere with other BASIC operations, it's a good idea to disable it before running another program. However, the Proofreader is purposely difficult to dislodge: It's not affected by tape or disk operations, or by pressing RUN/STOP– RESTORE. The simplest way to disable it is to turn the computer off then on. A gentler method is to SYS to the computer's built-in reset routine (SYS 65341 for the 128, 64738 for the 64, and 65526 for the Plus/4 and 16). These reset routines erase any program in memory, so be sure to save the program you're typing in before entering the SYS command.

If you own a Commodore 64, you may already have wondered whether the Proofreader works with other programming utilities like "MetaBASIC." The answer is generally yes, *if you're using a 64 and activate the Proofreader after installing the other utility.* For example, first load and activate MetaBASIC, then load and run the Proofreader.

When using the Proofreader with another utility, you should disable *both* programs before running a BASIC program. While the Proofreader seems unaffected by most utilities, there's no way to promise that it will work with any and every combination of utilities you might want to use. The more utilities activated, the more fragile the system becomes.

The New Automatic Proofreader

```
10 VEC=PEEK(772)+256*PEEK(773)
   :LO=43:HI=44
20 PRINT "AUTOMATIC PROOFREADE
   R FOR ";:IF VEC=42364 THEN
   {SPACE}PRINT "C-64"
30 IF VEC=50556 THEN PRINT "VI
   C-20"
40 IF VEC=35158 THEN GRAPHIC C
   LR:PRINT "PLUS/4 & 16"
50 IF VEC=17165 THEN LO=45:HI=
   46:GRAPHIC CLR:PRINT"128"
60 SA=(PEEK(LO)+256*PEEK(HI))+
   6:ADR=SA
70 FOR J=0 TO 166:READ BYT:POK
   E ADR,BYT:ADR=ADR+1:CHK=CHK
   +BYT:NEXT
80 IF CHK<>20570 THEN PRINT "*
   ERROR* CHECK TYPING IN DATA
    STATEMENTS":END
90 FOR J=1 TO 5:READ RF,LF,HF:
   RS=SA+RF:HB=INT(RS/256):LB=
   RS-(256*HB)
100 CHK=CHK+RF+LF+HF:POKE SA+L
   F,LB:POKE SA+HF,HB:NEXT
110 IF CHK<>22054 THEN PRINT "
   *ERROR* RELOAD PROGRAM AND
   {SPACE}CHECK FINAL LINE":EN
   D
120 POKE SA+149,PEEK(772):POKE
    SA+150,PEEK(773)
130 IF VEC=17165 THEN POKE SA+
   14,22:POKE SA+18,23:POKESA+
   29,224:POKESA+139,224
140 PRINT CHR$(147);CHR$(17);"
   PROOFREADER ACTIVE":SYS SA
150 POKE HI,PEEK(HI)+1:POKE (P
   EEK(LO)+256*PEEK(HI))-1,0:N
   EW
160 DATA 120,169,73,141,4,3,16
   9,3,141,5,3
170 DATA 88,96,165,20,133,167,
   165,21,133,168,169
180 DATA 0,141,0,255,162,31,18
   1,199,157,227,3
190 DATA 202,16,248,169,19,32,
   210,255,169,18,32
200 DATA 210,255,160,0,132,180
   ,132,176,136,230,180
210 DATA 200,185,0,2,240,46,20
   1,34,208,8,72
220 DATA 165,176,73,255,133,17
   6,104,72,201,32,208
230 DATA 7,165,176,208,3,104,2
   08,226,104,166,180
240 DATA 24,165,167,121,0,2,13
   3,167,165,168,105
250 DATA 0,133,168,202,208,239
   ,240,202,165,167,69
260 DATA 168,72,41,15,168,185,
   211,3,32,210,255
270 DATA 104,74,74,74,74,168,1
   85,211,3,32,210
280 DATA 255,162,31,189,227,3,
   149,199,202,16,248
290 DATA 169,146,32,210,255,76
   ,86,137,65,66,67
300 DATA 68,69,70,71,72,74,75,
   77,80,81,82,83,88
310 DATA 13,2,7,167,31,32,151,
   116,117,151,128,129,167,136
   ,137
```

Best Buys From TENEX

No Gimmicks, No Hidden Charges, No Nonsense, Just Low Prices and Great Service!

FREE

Dust Cover & Everything Book

Discover the savings and easy shopping available from TENEX Computer Express with a FREE copy of our *Everything Book for Commodore Computing*. Get to know our great products, extensive selection and fast service PLUS receive a FREE dust cover for your C64, or C128. The cover is an anti-static, 8 guage vinyl sewn to our exacting standards with reinforced seams. ($2.95 Shipping Charge).

31627 C64 Dust Cover and Catalog (G4T)
38464 C128 Dust Cover and Catalog (G4T)

From microfal

The 39¢ Diskette

Are you paying too much for diskettes? Try our first quality, prime, 5-1/4" diskettes (no rejects, no seconds) at these fantastic sale prices and save, save, SAVE! Disks are packaged in boxes of 50; including diskettes in sleeves, labels, and write-protect tabs.

Each diskette is certified to be 100% error free and comes with a lifetime warranty (if you have a problem, we'll replace the diskette). All diskettes include hub reinforcement rings and write-protect notch.

All diskettes are double-density and work in either single or double-density drives.

SS, DD Diskettes, Box of 50
32391 $19.50 - 39¢ ea.!
DS, DD Diskettes, Box of 50
32403 $24.50 - 49¢ ea.!

Diskette Storage

Only $9.95

- 100 disk (5-1/4") capacity.
- Lock and keys for extra security and easy carrying.
- Includes 8 index dividers with labels for organization of filing and retrieval.
- Made of durable anti-static, high impact plastic.
- Attractive smoked color lid.

Sug. Retail $19.95
66826 NOW ONLY $9.95

Hardware

Printers

Citizen MSD 180D	$169.95
Citizen MSP 40	$329.95
Citizen MDP 15E	$359.95
Okidata 180 Printer	$224.95
Okidata Microline 183	$279.95
Okimate 20 Color Printer	$124.95
Star NX-1000	$CALL
Star NX-1000C	$CALL
Star NX-1000 Rainbow	$CALL
Star NX-15	$CALL

Computers

Commodore C128D	$CALL
Amiga 500	$CALL
Amiga 2000	$CALL
TENEX Turbo (Loaded)	$595.00

Disk Drives

FSD-2+ Disk Drive	Sale $149.00
Commodore 1581 Drive	$CALL
Commodore 1541 Drive	$CALL

Monitors

13" Color Composite	$159.95
Com. 1084 RGB Color	$CALL
Magnavox CM8762, Color	$269.95

Interfaces

Xetec Super Graphix Jr	$44.95
Xetec Super Graphix	$59.95
Xetec Super Graphix Gold	$CALL
Deluxe RS232 Interface	$44.95

Joysticks/Controllers

NEW! Wico Ergostick	$19.95
Commodore 1352 Mouse	$69.95
Epyx 500XJ	$15.95
Icon Troller	Sale $14.95
Suncom Tac 5	$14.95

Power Supplies

CPS-30 Power Supply, C64	$29.95
Pow'r Pak 64	$49.95
Pow'r Pak 128	$59.95

Accessories

Cartridge Expander, C64	$19.95
Disk Doubler	$6.95
Universal Printer Stand+	$14.95
Data Transfer Switch	$24.95

Ribbons

NX-1000 Black	$5.95
Okidata 120/180/183	$7.95
Okimate Color	$3.95
Gemini 10X,SG-10/15	$2.99

Software

Berkeley

GEOS-64 2.0	$39.95
GEOS-128	$44.95
geoPublish	$44.95
geoCalc, C128	$44.95
geoFile, C128	$44.95
Deskpack Plus	$19.95

Cinemaware

The Three Stooges	$23.95
Warpspeed	$34.95
Rocket Ranger	$24.95

Thunder Mountain

Pac-Man	$7.95
Ms. Pac-Man	$7.95

Utilities

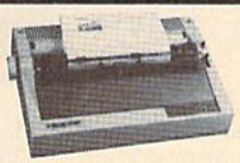
Big Blue Reader CP/M	$34.95
Drive Alignment	$24.95
Fast Load (Epyx)	Sale $23.95
Copy II 64/128	$34.95
The Final Cartridge III	$53.95
Flexidraw 5.5	$23.95

Miscellaneous

Wheel of Fortune	$9.95
Wheel of Fortune II	$9.95
Certificate Maker	$14.95
Newsroom	$14.95

Free! 56 Page "Everything" Book With Any Order!

$109.95



True Letter-Quality Printing

The Blue Chip features bi-directional daisywheel printing with a print speed of over 150 words per minute. Its friction feed mechanism operates just like a typewriter's release lever and paper advance knob, for your use with letterhead, envelopes, etc. This printer will plug into the serial port of your Commodore. Use the included cable and you're ready to go! Includes a high-quality print ribbon that lasts for 70,000 characters. Six month warranty.

77428 Blue Chip Daisywheel Printer $109.95
77436 Black Film Ribbon for Blue Chip $8.95
77512 Black Ribbon, Multi-strike for Blue Chip $8.95

$69.95

1200 Baud Bargain

The VOLKS 6480 MODEM transmits at 1200 baud with the ability to slow down to 300 baud for maximum capability. This Volks Modem will connect directly to the user port of your Commodore. Its features include over 30K memory, Auto Dial/Auto Answer, Bell 212A capability, tone and pulse dialing plus more. Includes FREE Comterm IV software.

40521 Volks 6480 Modem $69.95

The Best Prices The Best Service WHY SHOP ANYWHERE ELSE?

Formed For The Human Hand

Only $19.95

Ergostick Joystick. This is the cutting edge of joystick technology. It's the Ergostick Joystick and you'll be amazed at its innovation. Unlike all other joysticks, the Ergostick literally forms around the human hand which optimizes the operator's hand/eye coordination.

76253 Ergostick Joystick $19.95

From Your Friends At

TENEX Computer Express

We gladly accept mail orders!
P.O. Box 6578
South Bend, IN 46660

Questions?
Call 219/259-7051

Ad G4T

Shipping Charges

Order Amount	Charge
less than $19.99	$3.75
$20.00-$39.99	4.75
$40.00-$74.99	5.75
$75.00-$149.99	6.75
$150.00-$299.99	7.75
$300.00 & up	8.75

MasterCard · Card · VISA

No Extra Fee For Charges!

ORDER TOLL FREE
1-800-348-2778
WE VERIFY CHARGE CARD ADDRESSES

COMMODORE 64 is a registered trademark; and COMMODORE 128 is a trademark of Commodore Electronics, Ltd. APO, FPO, AK, HI, CN, VI, GU, and foreign orders are subject to additional shipping charges. NOTE: Due to publishing lead-times, product prices and specifications are subject to change without notice.

DUST COVERS

SATISFACTION GUARANTEED

★ CUSTOM MADE TO FIT
★ HEAVY 32-oz. VINYL ANTI-STATIC
★ EXTENDS EQUIPMENT LIFE
★ Choice of Colors Light Tan or Brown

COMPUTERS

C-64/Plus 4/C-64C	8.00
C-128	13.00
Datassette (C2N)	5.00
Amiga 1000	13.00
(W/Amiga Mon. Stacked)	28.00
Keyboard only	7.00
Atari 800XL, 130XE	10.00
Atari 520 ST	14.00
IBM PC/XT	28.00
IBM 5051 Keyboard (Dimensions Required for IBM Clones)	8.00

DISK DRIVES

C-1541, C-1571	8.00
Amiga 3½" D/Drv	8.00
Amiga 5¼" D/Drv	9.00
Indust GT, MSD SD-1	8.00
MSD SD-2	10.00
Enhancer 2000	8.00
FSD-1	8.00
Atari 1050	8.00

PRINTERS

C-1525/MPS 801	10.00
C-1526/MPS 802	13.00
C-MPS/803, C-1520	8.00
Panasonic 1090/91	13.00
Okidata 120/192	13.00
Okimate 10/20	8.00
Epson MX/FX/RX80	13.00
Epson LX80/C-1000	13.00

PRINTERS

Seikosha SP-1000	13.00
Comrex 220	13.00
C'Itoh 8510	13.00
Juki 5510	13.00
Imagewriter	13.00
Epson JX 80	13.00
Epson FX 85/185	13.00
Okidata 92	13.00
Citizen MSP 10	13.00
C/DPS 1101	16.00
Gemini 10 & Star 10's	13.00
Gemini 15 & Star 15's	16.00
Atari 1027	13.00

MONITORS

Atari SC 1224RGB	19.00
C-1702, BMC Color	16.00
C-1902/Amiga	19.00
Amdek 500-700	19.00
CM-141 (C-1802)	19.00
C-1902A/Magnvx 40	19.00
NEC (State Model)	19.00
Magnavox 80 RGB	19.00
Princeton (State Model	19.00
Thompson CM 365-66	19.00
Taxan (State Model)	19.00
Sakata SC-100	19.00
Zenith (State Model)	19.00
VIDEO RECORDERS	**13.00**
State Make & Model Dimensions required including clock cut-out	

Order by stating MAKE, MODEL and COLOR CHOICE - TAN or BROWN with check or money order plus $1.50 per item ($4.50 max.) shipping and handling. Calif. Res. Include 6½ + local tax. APO, 2.00/item, Foreign 3.00/item

SPECIAL COVERS WILL BE MADE TO YOUR DIMENSIONS. SEND YOUR REQUIREMENTS FOR OUR LOW PRICE QUOTES.

Crown Custom Covers
24621 PAIGE CIRCLE DEPT. A
LAGUNA HILLS, CA 92653
(714) 472-6362

3M Mark Q Diskettes

Tested 30 Million Times.
5-1/4" Double Sided Double Density.
69¢ each (10/Box)
A full warranty for the life of the diskette.

brother

Hard to find Series II Toner Cartridge-MFR'D...to meet or exceed MFR specs for: Apple Laserwriter II, Brother HL-8, HP Laser Jet II, Canon LBP8II, #264-0002.....**$83.95 Sale**

Metro Data Vac/2

Simple, preventive maintenance for your computer system.
Cleans Laser Printers and Copy Machines, too!

Lightweight...High Powered...
Triple filtration system...
Sturdy all steel construction...Made in USA.

DATA-VAC/2...**$99.00**
Disposable Bags (5/pk)...**$4.00**
TBF Toner Replacement Bags (5/pk) & Fiberglass Micro Filters (2/pk)...**$23.95**

Order Toll Free: 800-258-0028

Foreign Inquiries Invited. C.O.D.
Minimum Order: $50.00. Low S&H charge for service direct to your door. Prices Subject to Change.

FREE Catalog.
Complete Line of Quality Supplies For Your Computer.

pd™ **Precision Data Products™**
P.O. Box 8367, Grand Rapids, MI 49518
Michigan: 800-632-2468
616-452-3457 **FAX: 616-452-4914**

COLOR RIBBONS & PAPER

COLOR RIBBONS RED, BROWN, BLUE, PURPLE, GREEN, YELLOW,

Ribbons	Price Each	Black	Color	Heat Transfer
Apple Imagewriter I/II		3.75	4.50	6.50
Citizen 120 D		5.00	6.00	7.95
Commodore MPS 801		4.15	4.75	5.75
Commodore MPS 802		6.00	6.75	–
Commodore MPS 803		4.95	5.95	7.00
Commodore MPS 1000		3.95	4.95	6.75
Commodore MPS 1200		5.00	6.00	7.95
Commodore 1525		6.00	–	–
Okidata 82/92/93		1.75	2.25	4.50
Okidata 182/192		6.50	7.50	–
Panasonic KX-P 1090		6.75	7.75	–
Seikosha SP 800/1000		5.25	6.50	7.95
Star SG 10		1.75	2.25	4.50
Star NX10/NL10		5.00	6.00	7.95

COLOR PAPER

BRIGHT PACK—200 Sheets/50 each color: Red, Blue, Green, Yellow. 9 1/2 × 11 — $10.90/pk.

PASTEL PACK—200 Sheets/50 each color: Pink, Yellow, Blue, Ivory. 9 1/2 × 11 — $10.90/pk.

T-SHIRT RIBBONS (Heat Transfer) — Call For Price.

COLOR DISKETTES
5 1/4" DS/DD Rainbow Pack. 10/pack — $12.50

For ribbons & paper not listed above, call for price & avail. Price & spec. subject to change w/o notice. Min. order $25.00. Min. S & H $3.50. Add $2.25 C.O.D. add'l. IL res. add 6.25% tax. MC & Visa accepted.

RENCO COMPUTER PRINTER SUPPLIES
P.O. Box 475, Manteno, IL 60950 U.S.A.
1-800-522-6922 • (IL) 1-800-356-9981
815-468-8081

NEW V6.0 ULTRABYTE DISK NIBBLER

NIBBLE COPIER WITH 305 PARAMETERS FOR COMMODORE 64 AND 128

- Copies most protected disks in 2 minutes without need for parameters including rapid-locked
- 305 parameters to make unprotected copies of recent programs including VMAX protection. 100 more than V5.0. Send stamped envelope for list
- Copies up to 40 tracks using 1 or 2 1541 or 1571 drives. Copies both sides on 1571
- Copies itself (for this reason, no refunds given)

V6.0 $29.95 PLUS $4.00 SHIPPING

1. Disk Surgeon V2.0 -- new disk utility..... $10.00
2. Ultramail -- mail list and labels..... } both for
   Handy-Capper -- race handicapper..... } $10.00
3. McMurphy's Mansion -- text adventure.... } both for
   Soluware -- solutions to 10 adventures.... } $10.00
4. 150 older parameters and file copier..... $10.00

Add $4.00 shipping (covers up to 5 items)

Mastercard, Visa, Check or M.O., Calif. add 6.5% ($1.85) sales tax. Foreign orders/COD add $2.00. Payment must be in U.S. funds

UPDATES - V6.0 is same as V5.0 but with 100 new parameters. Return original Ultrabyte parameter disk with $15.00 plus $4.00 shipping. Foreign add $2.00. No exceptions.

To order, write or call 24 hr. order line. For info. write.

ULTRABYTE (818) 796-0576
P.O. Box 789 LaCanada, CA 91011 USA

BIG BLUE READER 128/64
COMMODORE <=> IBM PC
File Transfer Utility

Big Blue Reader 128/64 is ideal for those who use IBM PC compatible MS-DOS computers at work and have the Commodore 128 or 64 at home.

Big Blue Reader 128/64 is not an IBM PC emulator, but rather it is a quick and easy to use file transfer program designed to transfer word processing, text and ASCII files between two entirely different disk formats; Commodore and IBM MS-DOS. *Both C128 and C64 applications are on the same disk and requires either the 1571 and/or 1581 disk drive.* (Transfer 160K-360K 5.25 inch & 720K 3.5 inch MS-DOS disk files.)

Big Blue Reader 128 supports: C128 CP/M files, 17xx RAM exp, 40 and 80 column modes.

Big Blue Reader 64 Version 2 is 1571 and 1581 compatible and is available separately for only $29.95!

BIG BLUE READER 128/64 only $44.95

Order by check, money order, or C.O.D.
No credit card orders please. Foreign orders add $4
BBR 128/64 available to current BBR users for $18 plus your original disk.
Free shipping and handling. CALL or WRITE for more information.

To order Call or Write:

SOGWAP Software
115 Bellmont Rd
Decatur, IN 46733
Ph (219) 724-3900

Classified

SOFTWARE

FREE PUBLIC DOMAIN SOFTWARE - Request free catalog or send $2 for sample disk and catalog (refundable). C64-128 CALOKE, IND., Dept. JK, Box 18477, K.C., MO 64133

COMMODORE: TRY BEFORE YOU BUY. Best selling games, utilities, educ'l + classics & new releases. 100's of titles. Visa/MC/Disc Free brochure. RENT-A-DISC, Frederick Bldg. #222, Hunt'n, WV 25701 (304) 529-3232

C64/128 FINEST PUBLIC DOMAIN PROGRAMS Pretested quality programs * Most $1.50 * * On Disk * YOU pick the programs that YOU want!!! Free diskfull of programs with first order! For a list + Description send SASE to: JLH Co, Dept. G, Box 67021, Topeka, KS 66667

C64/128 EDUCATIONAL P.D. SOFTWARE By grade level and subject, ie K–3 math, K–3 English, 4–6 math, etc. Free Catalog PSL Inc., Box 750 A, Old Bridge, NJ 08857

PUBLIC DOMAIN SOFTWARE FOR C64/128 100 programs only $10 or 260 programs for $25 or 2 stamps for catalog. MERIT, Box 114 A, Spotswood, NJ 08884

FREE SOFTWARE FOR C-64. Send one stamp for catalog or $2.00 for 30 sample programs and catalog (refundable). RVH Publications, 4291 Holland Rd, #562-G, Virginia Beach, VA 23452

RENT 64/128 SOFTWARE! 100's of disks. Lowest prices. No deposit or fee. Free catalog. Centsible Software, PO Box 930, St. Joseph, MI 49085 (616) 982-0327.

THOUSANDS OF PD PROGRAMS FOR C64/128! We have Games, Utilities, Music and much more! For information write: Lightspeed Software, POB 340427, Tampa, FL 33694

FREE CATALOG OVER 20,000 P.S. programs for C64/C128. Priced from $1.25 disk. Midwest Public Domain, POB 5048, Terre Haute, IN 47805

Thousands of C64/128 PD programs on 250+ disks. Free listing or $1 large catalog. DISKS O'PLENTY INC., 7958 Pines Blvd., Suite 270A, Pembroke Pines, FL 33024

C64 & C128 P.D. Disks $3.00 each. VISA/MC FREE catalog. Call or write. BRE Software, 352 W. Bedford, Suite 104-G, Fresno, CA 93711 (800) 622-7942, (209) 432-2159 in CA

STOCK MARKET ANALYSIS PROGRAM for the C64/128. Powerful but easy to use. Curve plotting, inventory and more. Use with Simon's Basic Cart. $25. C. W. Walker, 3711 W. 230th, #102 Torrance, CA 90505

AUTOGEN+ NEW File Generator developed for C128 dBaseII™ users. Only $24.50 Free dbaseII public domain application programs included with order. Orders to: DeBellis PSC1, Box 3165 APO SF CA 96286

RASH ANALYSIS PROGRAM FOR PARENTS Analyze your child's rash on your C-64. $20/disk $5/demo to MAVERICK SOFTWARE P.O. Box 385, S. Elgin, IL 60177-0385

THOUSANDS OF MODERN C64/128 PROG.s FOR a few cents each. Send refundable $5 for 100 programs, computerized list & info. Richardson, POB 681208 S.A., TX 78268-1208

WIN LOTTO MILLIONS! LOTTO PICKER PLUS v2.1 Lotto Picker Plus, the original lottery selection software, allows you to store winning Lotto, Keno, & Pick 3/4 numbers & choose between three modes of probability analysis (hot, due, unbiased) in order to give you the winning edge! Guaranteed to work for all lotteries. Bonus numbers are easily handled and our full-featured database editor gives you access to your files. We give you the PICKS—not a bunch of jumbled statistics! **$34.95** (+5.55 s/h). 64/128, IBM, 64K Apple II. NY res. add tax. NOT Copy-protected.
ORDER TODAY! 1-800-634-5463 ext 293 (M–F 8–5)
GE RIDGE SERVICES, INC., 170 Broadway Suite 201-CG, New York, NY 10038
Info/Dealers 718-317-1961

MOVIEFILE DISK FOR C64. Put your movie collection on disk. Send $20 US to: CZAR NICHOLAS SOFTWARE, 109-1012 Richelieu Ave., Vancouver BC CAN VGH 1T1

C64/C128CPM Menu driven Public Domain 10 disk sides (specify computer) $15.00 Send check/money order to Pat DeBellis, PSC1, Box 3165 APO SF CA 96286

Free!! Best 2-Player War Game Ever! Thrills and fun guaranteed, money back! For STAR EMPIRE, Send $2 for P&H to GBI, PO Box 662, Los Alamitos, CA 90720

HARDWARE

TEMPERATURE PROBE FOR C128/64. Suitable for in-outdoor use w/program on disk in native modes. Send $14.95 to: TEMP, PO Box 1553, Brevard, NC 28712 or write for free info.

BULLETIN BOARDS

DMBBS—BETTER, CHEAPER THAN MOST BBSs w/BEST on-line games. Send SASE for info ARTISoft, 3401 N. Charles St., Apt. 211A, Baltimore, MD 21218. BBS-301/467-2157

COMPUTER REPAIR

Authorized Repairs C64/128: $45 & $50; 1541/1571: $50 & $65; SX64, 128D, Amiga, PC: $Call 816-872-3611. Quick Serv. 30 day warranty. We buy, sell, trade. MOM & POP's COMPUTER SHOP, Rt. 2, Box 119, Cainsville, MO 64632

AUTHORIZED COMM SERV. C64 $37.95; C128 $65.95; SX64 $65.95; 1541/1571 $45.95. AVT, 1310 S. Dixie Hwy, Ste. 18W, Pompano Beach, FL 33060. 305-785-2490. 120 day wrnty on all repairs.

C64 REPAIR $39.95 FLAT RATE. 1541/1571 $49.95; SX64-$59.95; 128-$59.95. 48 Hr turn-around. 30 dy warranty. A&M Computer Repair, 20 Guernsey, New Windsor, NY 12550 914-562-7271

AUTHORIZED COMMODORE SERVICE. C64 $43.95; C128 $64.95; 1541/1571 $59.95; IEEE $Call. Fast Service. 30 day warranty. We buy, sell & trade hardware. MIDWEST COMPUTERS, 519 Broadway, Cape Girardeau, MO 63701 (314) 339-0491 EXT. 101

COMPUTE!'s Gazette Classified is a low-cost way to tell over 225,000 microcomputer owners about your product or service.

Rates: $25 per line, minimum of four lines. Any or all of the first line set in capital letters at no charge. Add $15 per line for boldface words, or $50 for the entire ad set in boldface (any number of lines.) Inquire about display rates.
Terms: Prepayment is required. Check, money order, American Express, Visa, or MasterCard is accepted. Make checks payable to COMPUTE! Publications.
Form: Ads are subject to publisher's approval and must be either typed or legibly printed. One line equals 40 letters and spaces between words. Please underline words to be set in boldface.
General Information: Advertisers using post office box numbers in their ads must supply permanent address and telephone numbers. Orders will not be acknowledged. Ad will appear in next available issue after receipt.
Closing: 3rd of the third month preceding cover date (e.g., June issue closes March 3rd). Send order and remittance to: Kathleen Ingram, Classified Manager, COMPUTE!'s Gazette, P.O. Box 5406, Greensboro, NC 27403. To place an ad by phone, call Kathleen Ingram at (919) 275-9809.
Notice: COMPUTE! Publications cannot be responsible for offers or claims of advertisers, but will attempt to screen out misleading or questionable copy.
Classified Display Rates: Classified display ads measure 2¼" wide and are priced according to height. 1" = $250; 1½" = $375; 2" = $500; 3" = $600; ($100 for each additional inch, e.g. 4" = $700, etc.) Preferred supplied material is Velox or PMT.

COMPUTE!'s Gazette Classified is a low-cost way to tell over 225,000 microcomputer owners about your product or service.

Rates: $25 per line, minimum of four lines. Any or all of the first line set in capital letters at no charge. Add $15 per line for boldface words, or $50 for the entire ad set in boldface (any number of lines.) Inquire about display rates.
Terms: Prepayment is required. Check, money order, American Express, Visa, or MasterCard is accepted. Make checks payable to COMPUTE! Publications.
Form: Ads are subject to publisher's approval and must be either typed or legibly printed. One line equals 40 letters and spaces between words. Please underline words to be set in boldface.
General Information: Advertisers using post office box numbers in their ads must supply permanent address and telephone numbers. Orders will not be acknowledged. Ad will appear in next available issue after receipt.
Closing: 3rd of the third month preceding cover date (e.g., June issue closes March 3rd). Send order and remittance to: Kathleen Ingram, Classified Manager, COMPUTE!'s Gazette, P.O. Box 5406, Greensboro, NC 27403. To place an ad by phone, call Kathleen Ingram at (919) 275-9809.
Notice: COMPUTE! Publications cannot be responsible for offers or claims of advertisers, but will attempt to screen out misleading or questionable copy.
Classified Display Rates: Classified display ads measure 2¼" wide and are priced according to height. 1" = $250; 1½" = $375; 2" = $500; 3" = $600; ($100 for each additional inch, e.g. 4" = $700, etc.) Preferred supplied material is Velox or PMT.

How To Type In *COMPUTE!'s Gazette* Programs

Each month, COMPUTE!'s Gazette publishes programs for the Commodore 128, 64, Plus/4, and 16. Each program is clearly marked by title and version. Be sure to type in the correct version for your machine. All 64 programs run on the 128 in 64 mode. Be sure to read the instructions in the corresponding article. This can save time and eliminate any questions which might arise after you begin typing.

We frequently publish two programs designed to make typing easier: The Automatic Proofreader, and MLX, designed for entering machine language programs.

When entering a BASIC program, be especially careful with DATA statements as they are extremely sensitive to errors. A mistyped number in a DATA statement can cause your machine to "lock up" (you'll have no control over the computer). If this happens, the only recourse is to turn your computer off then on, erasing what was in memory. So be sure to *save a program before you run it.* If your computer crashes, you can always reload the program and look for the error.

Special Characters

Most of the programs listed in each issue contain special control characters. To facilitate typing in any programs from the GAZETTE, use the following listing conventions.

The most common type of control characters in our listings appear as words within braces: {DOWN} means to press the cursor down key; {5 SPACES} means to press the space bar five times.

To indicate that a key should be *shifted* (hold down the SHIFT key while pressing another key), the character is underlined. For example, A means hold down the SHIFT key and press A. You may see strange characters on your screen, but that's to be expected. If you find a number followed by an underlined key enclosed in braces (for example, {8 A}), type the key as many times as indicated (in our example, enter eight SHIFTed A's).

If a key is enclosed in special brackets, [ ], hold down the Commodore key (at the lower left corner of the keyboard) and press the indicated character.

Rarely, you'll see a single letter of the alphabet enclosed in braces. This can be entered on the Commodore 64 by pressing the CTRL key while typing the letter in braces. For example, {A} means to press CTRL-A.

The Quote Mode

Although you can move the cursor around the screen with the CRSR keys, often a programmer will want to move the cursor under program control. This is seen in examples such as {LEFT}, and {HOME} in the program listings. The only way the computer can tell the difference between direct and programmed cursor control is *the quote mode.*

Once you press the quote key, you're in quote mode. This mode can be confusing if you mistype a character and cursor left to change it. You'll see a reverse video character (a graphics symbol for cursor left). In this case, you can use the DELete key to back up and edit the line. Type another quote and you're out of quote mode. If things really get confusing, you can exit quote mode simply by pressing RETURN. Then just cursor up to the mistyped line and fix it.

When You Read:	Press:	See:
{CLR}	SHIFT + CLR/HOME	
{HOME}	CLR/HOME	
{UP}	SHIFT + ↑ CRSR ↓	
{DOWN}	↑ CRSR ↓	
{LEFT}	SHIFT + ← CRSR →	
{RIGHT}	← CRSR →	
{RVS}	CTRL + 9	
{OFF}	CTRL + 0	
{BLK}	CTRL + 1	
{WHT}	CTRL + 2	
{RED}	CTRL + 3	
{CYN}	CTRL + 4	

When You Read:	Press:	See:
{PUR}	CTRL + 5	
{GRN}	CTRL + 6	
{BLU}	CTRL + 7	
{YEL}	CTRL + 8	
{ F1 }	f1	
{ F2 }	SHIFT + f1	
{ F3 }	f3	
{ F4 }	SHIFT + f3	
{ F5 }	f5	
{ F6 }	SHIFT + f5	
{ F7 }	f7	
{ F8 }	SHIFT + f7	

When You Read:	Press:	See:
←	←	
↑	SHIFT + ↑	

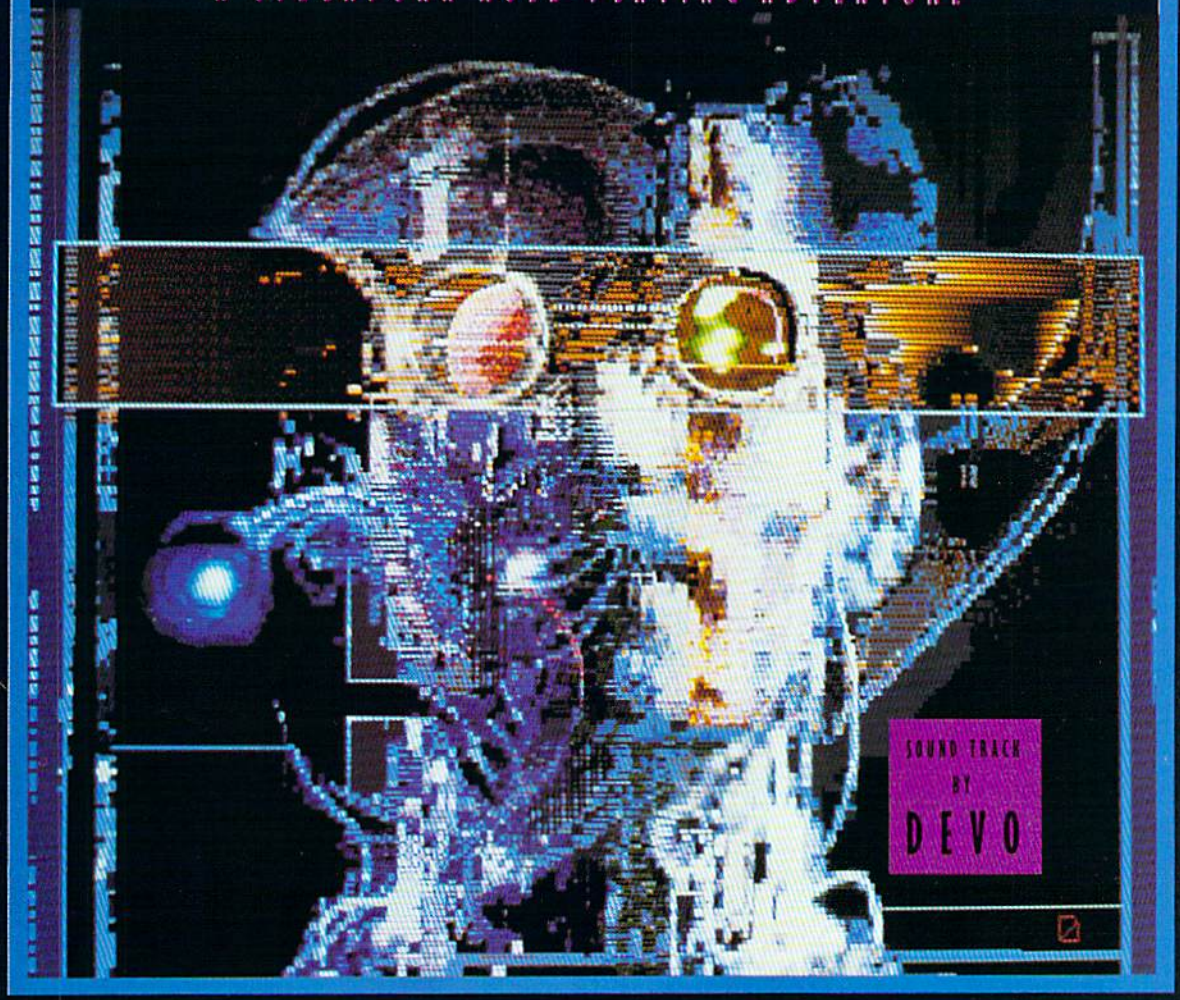
For Commodore 64 Only

[1]	COMMODORE + 1	
[2]	COMMODORE + 2	
[3]	COMMODORE + 3	
[4]	COMMODORE + 4	
[5]	COMMODORE + 5	
[6]	COMMODORE + 6	
[7]	COMMODORE + 7	
[8]	COMMODORE + 8	

IN A HUNDRED YEARS, HACKING WILL GET YOU KILLED.

NEUROMANCER™

A CYBERPUNK ROLE-PLAYING ADVENTURE



Nowadays, hacking can get you into trouble. A hundred years from now, it can get you killed.

Actually, death isn't bad. It's better than being a "Wilson". Of course, any hacker in his right mind would rather be a Wilson than lose all his neurons.

So what have you got going for you? About 30 megs on line, several viruses, and a wise-cracking ROM construct tagging along. You're just a cowboy trying to stay a step ahead of the AI's in a world where paranoia's not an illusion, everyone IS trying to flatline you.

It's party time in Cyberspace.

- Drawn from the pages of the smash cyberpunk novel "Neuromancer" by *William Gibson*
- Skill-based role-playing game by the designers of "The Bard's Tale™" and "Wasteland™"
- Original Sound Track by DEVO
- Soon to be a major motion picture from *Cabana Boy Productions*
- Multiple paths to a successful conclusion

Now available for the Commodore 64/128, Apple IIc, IIe/128K. Coming soon for the Amiga and IBM/Tandy.

If you can't find NEUROMANCER at a local dealer you can order direct at 1-800-227-6900.

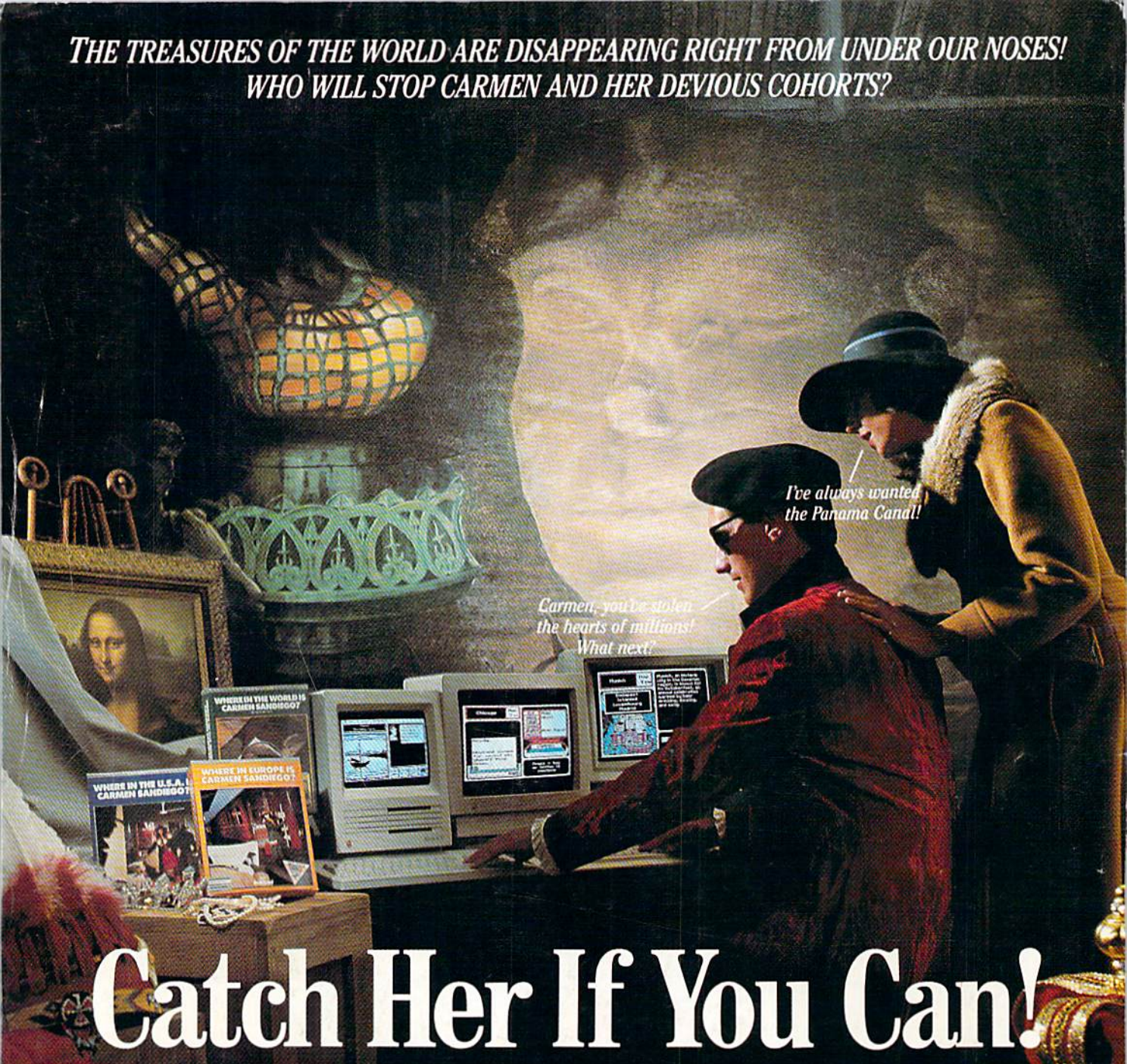
Actual C64 Screens

Interplay T.M.

Interplay Productions
1575 Corporate Drive
Costa Mesa, CA
(714) 549-2411

Neuromancer is a trademark of Cabana Boy Productions Inc.
Bard's Tale and Wasteland are trademarks of Electronics Arts.
Commodore is a trademark of Commodore Business Machines.
Apple is a trademark of Apple Computer Inc.
Amiga is a trademark of Commodore Business Computers.
IBM is a trademark of International Business Machines.
Tandy is a trademark of the Tandy Corporation.

THE TREASURES OF THE WORLD ARE DISAPPEARING RIGHT FROM UNDER OUR NOSES!
WHO WILL STOP CARMEN AND HER DEVIOUS COHORTS?


I've always wanted the Panama Canal!
Carmen, you've stolen the hearts of millions! What next?
WHERE IN THE WORLD IS CARMEN SANDIEGO?
WHERE IN EUROPE IS CARMEN SANDIEGO?

Catch Her If You Can!

Nothing is sacred to the notorious Carmen Sandiego. She and her gang have already swiped a warehouse full of treasures, from the Sphinx to the Statue of Liberty's torch. And now you have been assigned to capture them.

Start out at the scene of the crime, questioning witnesses. To help you decipher the clues you uncover, each of these award-winning games includes a reference book filled with maps and information.

As you track the culprits, you'll sharpen your thinking skills. At the same time, you'll learn fascinating things about the geography, history and culture of the places you visit.

Each adventure has a different gang of thieves. So collect all three and have three times the fun!

WHERE IN THE WORLD IS CARMEN SANDIEGO?® Explore the world's great cities, chasing Carmen's gang. Use Interpol's Crime Computer to get arrest warrants. Includes *The World Almanac.®*

WHERE IN THE U.S.A. IS CARMEN SANDIEGO?® Carmen and her gang are stealing America's national treasures, and you're on their trail. Includes *Fodor's® USA* travel guide.

WHERE IN EUROPE IS CARMEN SANDIEGO?™ Carmen strikes again! This time, it's the 34 nations of Europe. To help you, you'll have the Rand McNally® *Concise Atlas of Europe* plus an on-screen Fact-finder's Database and Crimestopper's Notebook.

Carmen Sandiego products are available for Apple, Apple IIGS, Macintosh, Commodore, IBM and 100% compatible computers for suggested retail prices of $34.95 – $44.95.

THREE WAYS TO BUY: Visit your software dealer or call 800-527-6263, 8AM-5PM PT, for credit card purchases and ordering by mail.

For more information, write to Brøderbund Software-Direct, P.O. Box 12947, San Rafael, CA 94913-2947.

Brøderbund®

© Copyright 1988 Brøderbund Software, Inc. The World Almanac, Fodor's and Rand McNally are registered trademarks of The Newspaper Enterprise Association, Fodor's Travel Publications, Inc. and Rand McNally and Company, respectively.

70ZTE